THIS WEEK'S National Petroleum NEWS

Index to Coming Meetings

Kentucky Petroleum Marketers Association, Brown Hotel, Louisville, **May 6, 7.**

Wisconsin Petroleum Association, Hotel Pfister, Milwaukee, May 14.

National Oil Scouts Association of America, San Antonio, Tex., May 19, 20.

Natural Gasoline Association of America, Mayo Hotel, Tulsa, May 20, 21, 22.

Mid-Continent District, American Petroleum Institute, Division of Production, Mayo Hotel, Tulsa, May 23 and 24.

West Virginia Oil Marketers Association, Daniel Boone Hotel, Charleston, W. Va., June 12, 13.

American Society for Testing Materials, Atlantic City, N. J. June 23 to 27.

North American Gasoline Tax Conference, King Edward Hotel, Toronto, Ont., Sept. 2, 3, 4.

National Safety Council, Petroleum Section, Pittsburgh, Pa., Sept. 29 to Oct. 4.

Big Four State Jobbers Convention, (Missouri, Iowa, Kansas and Nebraska) Kansas City, Mo., Oct. 14, 15, 16.

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They Traveled Thousands of Miles in the Air

EDWARD G. SEUBERT, president of the Standard Oil Co. of Indiana, and Allan Jackson, vice president in charge of aviation have flown 4500 miles, and 31,000 miles respectively on company business. Here they are alighting from their company tri-motored, well appointed plane, Stanolind III.

The company now operates three planes, two providing transportation for executives over its marketing territory comprising 11 states, and the third for promotional sales work. The three planes were in the air 285 hours in 1929, covered 29,634 miles and carried 2996 passengers.

The company has marked more than 3200 towns in its territory with the name of the place on the roofs of its bulk storage plants, as a guide to flyers. For this the Guggenheim fund awarded it certificates of recognition of service to aviation.

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Independents Organize Nationally, Attack Shell Interests

By Lawrence E. Smith
N. P. N. STAFF WRITER

FORT WORTH, April 19

WITHIN two months of a year old, the Independent Petroleum Association of America today concluded its first national convention. As a convention it achieved all its leaders hoped for, they asserted. It took on form and solidarity and made declaration of its principles.

In the latter respect the convention had a field day at the expense of the Shell interests. Pat Malloy, Tulsa oil man, evoked loud cheers when, at a suitable moment he read to the 500 present his conception of the true purposes of an association of independent oil producers and asserted that "The independent oil producer of this country and the foreign owned importer of crude have no unity of interest."

"I mean the Dutch Shell if you want me to be specific," he said. "There is direct and destroying conflict and in that field with us there can be no compromise. They have no natural rights we are bound to respect. They are not alone alien to our country, but foreign to our spirit of our own personal enterprise. . . . To permit such foreign interest and influence to impair the strength and the investment of the American industry is a matter that should challenge the interest and the attention and the hostility of every thoughtful man in this country."

Later, following the talk by Mr. Malloy—which was adopted with prolonged applause—Wirt Franklin, president of the association, said this is the time to stir public sentiment against this "foreign monster." He read a telegram from California quoting Sir Henri Deterding, present in San Francisco at the dedication of the new Shell building. Sir Henri, managing director of the Royal Dutch-Shell companies, was quoted as saying the public wants cheap petroleum products, and such the small operator cannot supply. He argued that the independent—the individual—must give way to the large companies.

Mr. Franklin said that, if it is possible from a constitutional standpoint, independents should work to keep this or any other foreign-owned company from producing, refining or marketing petroleum in the United States. He said he believed that, through state legislation, that purpose could be accomplished.

There were no fireworks directed at the major American oil companies. In the talk by Mr. Malloy, previously referred to, which now stands as the declaration of principles of the association, there was the direct assertion that the independent producers do not wish, "as a lasting thing, to be in quarrel with any distinctively owned and operated American oil concern. Whether that American interest be independent or not."

In two of the short talks at the meeting the point was made that Standard interests have been guilty of plotting against the welfare of the independent producer and Scott Heywood, of Jennings, La., inferred that the recent advance in the price of crude oil was timed to take the steam out of this convention. Those were individual expressions and went into the record as such.

The first day of the meeting a constitution was drafted, resolutions prepared and some of the wrinkles of organization smoothed over. There was a moment of spirited discussion

The I.P.A.A. Officers

President, Wirt Franklin, Ardmore, leader of the tariff drive on Washington, reelected.

Executive vice president, Harold B. Fell, Ardmore, reelected.

National vice presidents:

Texas, L. C. Turman, Fort Worth.

Louisiana, W. Scott Heywood, Jennings.

Colorado, A. W. Green, Denver.

Montana, C. J. Dousman, Baker.

Kansas, A. D. Allison, Wichita.

New Mexico, Van S. Welch, Artesia.

Oklahoma, Ross D. Pine, Okmulgee.

Arkansas, Joe Mahoney, El Dorado.

North Dakota, H. C. Schumacher.

West Virginia, W. S. Hallihan, Charleston.

Kentucky, P. G. Blazer, Ashland.

New York, J. Edward Jones, New York City.

Pennsylvania, Larry Fawns, Pittsburgh.

Illinois, Thomas Flynn, Robinson.

Ohio, H. E. Smith, Marietta.

Fred E. Tucker, secretary of the Independent Petroleum Association of America; Wirt Franklin, Ardmore producer, president; Joe I. Cromwell, prominent independent operator of Oklahoma City

as to the division of moneys that will come in from membership dues.

It was the wish of a Texas contingent to devote 25 per cent to the national association and 75 per cent to the state divisions. They said there were important local questions at hand that would call for financial aid. Mr. Franklin said that, if local matters are to take precedence over the chief reason for the founding of the national association—the securing of some protection from imports of foreign oil—the national organization might as well disband. The matter was settled by dividing the dues half and half.

The new constitution lays down the rules under which the association will function, prescribes its form and quite briefly defines its purpose. On the last point, it says the association is to promote and advance the oil industry of the United States, particularly the interests of those eligible to membership; to take such action as may be necessary to promote the general welfare of the industry, and of the nation. It is also to create a bureau for gathering and distributing data and statistics.

The association is to be organized into divisions, by states or territories of the United States. Each division will have a president and such other officers as it desires so long as it is not in conflict with the national organization.

Those eligible for membership are independent producers of oil or gas exclusively in the United States; independent refiners; intrastate oil or gas pipe line companies; owners of oil or gas royalties; land owners; federal permittees; independent marketers; drilling contractors; distributors of natural gas who conform to the independent designation; any person affiliated with the afore named.

"It is specifically provided," says the constitution, "that no person shall be eligible for membership who is engaged in importing crude petroleum or its products into the United States."

Four classes of membership are created. The annual membership is $25 yearly, or $3 monthly. The supporting membership, which includes an annual membership, may be in any amount which the member may subscribe in excess of $25 per year. Subscribing memberships are $5 yearly and are to be issued only to employes of persons who qualify as independents in any branch of the industry. Finally, there is the associate membership, which may be of any person interested in the program of the association. The fee for this is $10 with no voting right.

The legislative body of the association is the annual convention. It will be held at the time and place fixed by the previous annual convention or by the board of directors.

In the national convention each division will have five delegates with equal voting power and one additional delegate for each 20 members or major portion thereof.

The officers of the national association consist of a president, executive vice-president and one national vice-president from each division of the association. There will be a national treasurer, a secretary to be known as the executive manager. The board of directors consists of two from each of the divisions and the national president and executive vice-president. The national vice-presidents and the presidents of each division are all directors, making two from each division.

The executive committee, consisting of the national president, executive vice-president and three members of the board of directors chosen by the board, will act as the governing body between meetings of the board.

The president, with the approval of the directors, will appoint the executive manager and secretary, treasurer and the general counsel.

Headquarters of the association have been maintained in Ardmore, Okla., since organization. The Constitution gives the president and the directors authority to designate the headquarters city. This will be done shortly. Tulsa, Oklahoma City and Fort Worth, are making bids for this honor and Ardmore is anxious to keep it.

The final piece of business of the association was the election of officers. Wirt Franklin was reelected, a thunderous demonstration attending this action. Harold B. Fell, of Ardmore, was reelected executive vice-president.

No vice-president was named for California as the members from that state on the nominating committee were unable to fix upon a choice and preferred to leave it to the board of directors. In nearly all other cases the vice-presidents for states that had such officers were reelected. J. W. Olvey, of Arkansas, preferred to withdraw and at his request Mr. Mahoney was selected.

By resolution the convention expressed itself upon a number of topics. James H. Gardner, president of the Gardner Petroleum Co., Tulsa, offered one which was partly an endorsement of the report made by the Petroleum Economics Committee appointed by Secretary of the Interior Wilbur, chairman of the Federal Oil Conservation Board and partly a supplemental recommendation on that report. It said, in part:

"Whereas, said committee made no

(*Continued on Page* 22)

The Editors' Viewpoint

National Petroleum News

Over-Running on Crude By Committee's Schedule

UNCEASING effort on the part of the refining industry will be required if it operates within the limit of crude runs to stills set forth in the report of the Committee on Petroleum Economics appointed by Secretary of the Interior Wilbur to size up supply and demand for 1930. The committee's report was made public a week ago.

The committee's arbitrary balance sheet for the industry calls for crude runs to stills of 957,800,000 barrels for all 1930, a daily average of 2,624,000 barrels.

Holdings runs to this figure, with demand for gasoline pretty accurately estimated—which it can be—would provide for a reduction in gasoline stocks, now unnecessarily high, of only 5,000,000 barrels. A reduction of this amount, the committee says, would not disturb fuel oil contracts and commitments in any part of the country.

With some refiners known to be paying heed to the suggestion of the Federal Oil Conservation Board, made six weeks ago, that refinery operations be curtailed to avoid the industry's continuing to produce a surplus of gasoline, refineries reporting to the American Petroleum Institute, for the week ended April 12, ran 2,541,500 barrels of crude to stills daily average. The per cent of refinery capacity reporting was 95.4. On this basis, the full 100 per cent operating capacity of the country was running 2,664,000 barrels of crude to stills daily average during that week. This was some 40,000 barrels a day more than the average for the year called for in the committee's report.

This is not the entire story, however. The petroleum economics committee's report was based on entire 1930 operations. The first quarter had passed before that report was drawn up and in the hands of the industry. During the first three months of the year, according to the Bureau of Mines report for January and February, and the institute weekly figures for March, refineries ran to stills 2,605,500 barrels of crude daily average.

Normally, the first quarter of the year is one of small relative gasoline production. In 1929 the industry charged to stills in the first three months 23 per cent of the volume of crude run through refineries during the entire year.

If this same relationship holds true this year, of the economics committee's yearly requirements of 957,800,000 barrels, refining plants would use 220,300,000 barrels the first quarter, or a daily average of 2,447,700 barrels.

In other words, in the committee's schedule, refineries overran crude during the first quarter of this year to the amount of 157,300 barrels daily. For the 90 days of that period the surplus amounted to over 14,000,000 barrels. Spread over the 275 remaining days of the year, this means that, to bring refinery operations within the scope of the committee's schedule, over 50,000 barrels a day would have to be cut from the allowable runs of 2,624,000 barrels daily average for the year.

In short, if the refining industry wants to operate over 1930 and make such a moderate reduction in stocks as 5,000,000 barrels from the present figure of close to 54,000,000 barrels, it must reduce its operations nearly 100,000 barrels a day below the scale of operations as carried on during the middle of April.

Preferential Lease Renewals

WE DOUBT that the legal gentlemen who have to do with land and lease matters for oil companies have paid enough attention to the contract form under which the oil company operates today. On several occasions the Mid-Continent Oil & Gas Association has appointed special committees to look into this matter. They brought forth several beneficial changes a few years back and embodied them into the old Form 88.

Later more passes were made at the matter and some changes suggested, but nothing further came of it. They suggested on one occasion that a provision be adopted that would automatically pool royalty interests when the operators decided to pool the working interests for unit development. Naturally, the royalty owners —the buyers, as distinguished from the owner of the land —made quite a fuss.

It is still a mystery to many people, even some in the oil business, why, in times of overproduction and low prices, wildcatting search for new pools keeps up. There are several reasons that fit different cases, but a common one is the lease conditions under which the industry operates. A producer takes a lease for five or 10 years. Unless he completes—or begins, according to which style contract he has signed—a well by expiration date, he loses the lease.

In territory where there is no particular excitement, no land "play," he usually has little trouble in renewing. But, if the geologists have been at work and found good structural evidence, or a well in the region has demonstrated that conditions are ripe for a new field, the bonus for renewal is certain to jump. The operator has gone along, we'll say, for nearly five years. He has paid out rentals all this time and he finds that he can buy a renewal at a high figure or drill the test. He might even be outbid on the renewal, for this is certainly one branch of the oil business where competition is rampant.

Usually, he elects to drill. The well in many cases would not cost him a great deal more than he would spend in buying renewals on the several hundred acres on the wildcat structure. This sort of thing goes on all the time and the total area under lease is so great that the number of necessary wildcats is big and, as new areas, come into consideration, is ever increasing.

It might be possible to get up a contract that would give the lessee the preferential right to renew. It would be worth trying and the legal gentlemen might well think it over.

recommendations as to the restriction of imports of crude oil and/or the refined products therefrom.

"Now, therefore, be it resolved by the Independent Petroleum Association of America that it hereby goes on record as favoring the principle of curtailment and the allocation of oil production between the major states, as suggested, to prevent the overproduction of petroleum; and that the association goes on record in connection therewith, that as a part and parcel of the problem of overproduction it favors the allocation and restriction of imports and that all recommendations for decrease in United States production should be linked with a recommendation for a corresponding decrease in imports and that the association favors the decrease in both factors to prevent overproduction for the year 1930 and recommends that, since the association favors the restriction of production in 1930 to 942,800,000 barrels as recommended by the economics committee, which is within five per cent of the United States production for 1928, that in 1930 the imports of petroleum and petroleum products also be held within five per cent of the imports of 1928, in order that a still further draft may be made on excessive storage to the end that the oil business and business generally resulting therefrom may be put on a profitable basis for all branches of the industry."

Other resolutions adopted were:

Declaration of the purpose of the association to keep fighting for protection from imports, either by tariff of $1 a barrel on crude oil and 50 per cent ad valorem on refined products or by legislative limitation of imports to the 1928 figures. This resolution pledged the association to continue, after federal relief shall have been obtained, to cooperate in working out fair state laws to aid in balancing domestic production with demand.

Expression of gratitude to the executive department and the legislature of Texas, for the enactment of the Texas pipe line and purchase law and a recommendation to states that do not have such statutes to follow this example.

Expression of thanks to Wirt Franklin for his work and sacrifice of time in conducting the tariff fight in Washington.

Vote of thanks to state officials and legislatures for their stand on the tariff and another to the United States senators who voted for the bill.

Expression of disapproval of the federal government's non-development policy, as set forth in Executive Order 338, governing public lands. This resolution declared the order is "totally unwarranted, unjustified and unauthorized in view of the plain intent of the act of Congress opening up these lands to prospecting, by its Leasing Act of 1920."

The address of President Franklin was broadcast. In it he restated the arguments made to Congress for a tariff, spoke at some length upon the perils of foreign domination of American markets and asserted that the continued existence of the independent industry was vital to the public as a means of preventing monopolistic extortion.

Texas Governor Again Attacks Major Oil Companies

FORT WORTH, April 19

GOVERNOR Dan M. Moody of Texas told the Independent Petroleum Association of America at Fort Worth, April 19, the Federal Oil Conservation Board is seeking to further the interests of the larger oil companies.

"Under the nom de plume of conservation," he said at the banquet, "the board is encouraging the monopolizing of the petroleum industry."

Mentioning both permissive and coercive legislation proposed as a means for co-operative development, the governor said the suggestion of pooling arrangements was a veiled invitation for combinations that would at least get on the "ragged edge," if not actually violate anti-trust laws.

He said the suggestion of the Federal Oil Conservation Board for curtailment in refinery operations appeared to shorten the supply of products so that prices could be raised and at the same time build up accumulation of raw material unabsorbed by the crude markets. He also spoke against the present merger tendency.

Earlier in the day, the Independent's association had referred to the incoming board of directors a resolution introduced by Joe Danciger, of Danciger Oil & Refining Co., asking that the organization take a stand against the merger of the Standard Oil Co. of New York and the Vacuum Oil Co., now under test of legality in United States courts.

Mr. Danciger sought to have the association take general action by adoption of the resolution from the floor.

Former United States Senator Robert L. Owen, of Oklahoma, and State Senator J. D. Parnell, of Wichita Falls, were also speakers at the dinner presided over by Tom E. Cranfill of Dallas, president of the Texas arm of the Independent Petroleum Association. Both criticised the Shell.

E. R. BURT

one of the many oil men who have entered the oil business through the railroads. He started with the Ashboro-Aberdeen railroad, now a part of the Norfolk-Southern system, has served several terms as state senator, and among other things, is president of the Biscoe Oil Co., Biscoe, N. C. He was elected president of the North Carolina Independent Oil Jobbers Association in March

Darst Creek Properties Sold Louisiana Co.

HOUSTON, April 19.—Sale of Darst Creek properties of the United North & South Development Co., Edgar B. Davis, president, to the Louisiana Oil Refining Corp., of Shreveport, is confirmed. The properties include six producing wells and approximately 13,000 barrels potential production in the prorated Darst Creek field of the Luling fault zone. Wildcat properties of the United North & South in other areas are not included. Consideration is said to have been $1,000,000 cash and $1,500,000 in deferred payments from part of the future production.

Observance of Code Costs S.O. Indiana Biggest Account in Territory

By E. L. Barringer
N. P. N. STAFF WRITER

WICHITA, April 18

OBSERVANCE of the code of ethics has cost the Standard Oil Co. of Indiana the biggest piece of business in its territory N. R. Grimshaw, assistant general manager of the Indiana Standard company said at the sixteenth annual convention of the Kansas Oil Men's Association here April 17 and 18.

In bidding for this business he said his company followed the code and lost. He said also that his company had lost the biggest account in Wichita by observance of the code.

Mr. Grimshaw's speech opened the first session of the convention which was given to code discussion. Paul E. Hadlick, secretary of the marketing division of the American Petroleum Institute, attended and answered questions. A question box at the registration desk yielded five inquiries, mainly on the posting of prices on discounts, and on the quantity discount agreement operative in the middle west.

The quantity discount obtained by meat packers on gasoline in the Indiana territory was discussed. Mr. Grimshaw explained the contract his company holds with the Institute Equipment Supply Co., Chicago.

Standard of Indiana has had a contract for several years with the Institute Equipment Supply Co., which in turn sells to the meat packers throughout the territory. The local meat packers, if they desire, may route their purchases through the Institute which has a total volume of more than 100,000 gallons of gasoline a month. This volume brings it in the top most bracket of the quantity discount agreement of 5 cents off in Chicago and 4½ cents off in the remainder of the territory.

Two or three such purchase arrangements are in effect in the middle west.

Mr. Hadlick said about 75 per cent of the complaints in Kansas were results of misunderstandings. Through the country misunderstands accounts for 75 to 80 per cent of the complaints.

"Where it is said that the code has broken down it would be put better to have said the code had not been given a chance as it was adopted only last fall," Mr. Hadlick told the jobbers.

"You get out of the code just what you put into it. Not many jobbers would want to try to get along without the code."

A. C. Carpenter, president of the association, said the code had helped in removing the free-equipment habit. Mr. Hadlick said the middle west jobbers were fortunate in not having to contend with commercial discounts at service stations.

N. E. Garrison, secretary of the Wichita credit men's association, spoke on credits, in place of George D. Tubbs, Foster Lumber Co., Kansas City. Mr. Tubbs was injured in an automobile accident while coming to Wichita.

The annual banquet and dance was on the final evening. Douglas Mallock, Chicago poet, was the speaker.

In reporting the 1929 convention NATIONAL PETROLEUM NEWS said that the Kansas association got good men in office, then kept them there. The results of the election of officers at the 1930 convention shows no change of policy.

A. C. Carpenter, Lesh Oil Co., Ottawa, was re-elected president, to begin his sixth term. A. W. Long, Long Oil Co., Manhattan, was retained as treasurer for the sixteenth term. J. A. Motter, secretary, Wichita, was accorded his eighth term.

Other officers who were re-elected are Dean Kimmel, Kimmel Oil Co., Hiawatha, first vice-president; C. E. McIlvain, McIlvain Oil Co., Phillipsburg, second vice-president; and R. M. Marks, Cunningham & Marks Oil Co., Baxter Springs, fourth vice-president. Burt McCullough, McCullough Oil Co., Marion, was elected third vice-president.

Total registration was 275 persons. Twenty-four refinery and equipment companies contributed to the incidental expenses of the convention.

The outlook of the motor fuel market of the future and the chances of survival of the Independent jobber was discussed in a paper by Edwin I. Reeser, director of public relations, Barnsdall Corp., and son of E. B. Reeser, president of the American Petroleum Institute. Mr. Reeser said in part:

I feel the supremacy of gasoline is to be challenged by ordinary furnace oil which sells at refineries at about 3 cents per gallon. This is the fuel that is being used by airplanes which are powered with Packard Diesel motors. It is also being used in test Ford cars that are powered with Pratt & Whitney Diesel motors and in operation today.

It is my opinion that in the next ten years we shall witness the last stand of the gasoline automobile. With it will go the red, white, blue and green gasolines which public demand has forced us to sell. The Diesel car will require much less attention and will be much more economical to run.

There will be some who will oppose the encroachment of the Diesel automobile, since a new process has recently been perfected which is known as hydrogenation and which makes it possible to get a yield of 100 per cent of gasoline from a barrel of crude oil. The increased demand for furnace oil will no doubt bring about higher prices for this product, but the fact is that Diesel engines, such as are being operated today, can be run on crude oil without any refining whatever.

I believe that within fifteen years gasoline will be used principally for cleaning purposes and that its place

90% of Nebraska Gallonage Is Sold Under Code

LINCOLN, Neb., April 21.—In an effort to get every jobber in Nebraska to sign the code of marketing ethics, the state has been divided into 28 groups which will hold meetings to discuss the code. A Nebraska Code Bureau Bulletin is being issued by the Nebraska Petroleum Marketers Code Bureau in a further effort to acquaint jobbers with the value of the code.

C. M. Sutherland, secretary of the Nebraska Independent Oil Men's Association Lincoln is state chairman of the Nebraska Executive Committee of the code bureau. Other members are: C. N. Humphrey, Standard Oil Co. of Nebraska, Omaha; C. C. Rosenberg, Rosenberg Bros., Lexington; S. A. Wassum, Tekamah Oil Co., Tekamah; and Walter E. Steele, Independent Oil & Gas Co., Omaha.

Jobbers selling 90 per cent of the gallonage in the state have signed the code, the bulletin says.

will have been taken by a cheap fuel for Diesel motors.

The filling station of today may go through the same changes that occurred to the drug store. This tendency is shown in the large number of super-service stations being erected throughout the country.

Indiscriminate building of new stations is harmful to the oil industry. Today in this country there is approximately one station to every eighty cars. I firmly believe that the erection of new stations should be regulated by the state and that something along this line will result in the next year or two. However, as in the producing end of the oil business where if a man wants to dig a hole in the ground it is impossible to stop him, also it will be difficult to keep an oil company from using for whatever purposes it desires, real estate that it owns.

The chain filling station has its disadvantages. For example: one company in Kansas City keeps two men with cars busy driving around its own stations so as to discover short measurements. The agents and salesmen at chain filling stations receive very small remuneration and they are often held responsible for shortages so that their pay checks are often cut to almost nothing. This means that in order to live these men must sometimes make up the loss by cheating the public.

I personally know of one case where the agent at a chain filling station purchased oil from a cut-rate station down the street at 50 cents a gallon and sold it to the customers at his own stations at 35 cents a quart. In another case, the agent of a chain filling station purchased kerosene and placed it in his anti-knock gasoline. The difference in cost he put in his pocket.

Once a station man starts on this kind of dishonesty and finds it profitable he is very likely to continue to do so. I believe on the whole the public is cheated less by independent jobbers and dealers than by chain filling station operators; however, the chance for substitution of inferior products is greater in the case of the independent jobber or dealer than it is with the chain station. The difference is that the independent jobber or dealer is in business for himself and realizes that his profits over a period of time depend upon giving his customers such quality products that they will always return to him.

In the case of the chain filling station versus the independent oil jobber, the local man has on his side a growing tendency on the part of the general public to patronize him. This tendency is just as apparent today as is the general feeling of distrust on the part of the public against cut-price stations.

Every American community today has the urge to become sufficient unto itself. The fact is that this could never possibly become true and that actions which follow this urge for independence are just as apt to become harmful to the community as to help it.

Chain service stations and independent oil jobbers alike are all at the mercy of public opinion, and public opinion is something which, regardless of the merits of the case, can be created. Today there is a nation-wide public demand for Ethyl gasoline. As soon as a jobber takes on Ethyl it means that he is greatly cutting down his profit per gallon, and yet the majority of progressive jobbers have been forced to supply Ethyl to their customers.

Akron Bulk Plant Handles Only Commercial Solvents

AKRON, O., April 19

A BULK plant handling commercial solvents exclusively, perhaps the only one of its kind owned by an oil company, has been operated for several months in Akron, where the commercial solvent business is said to approximate the volume of the gasoline business.

This plant is operated by the Anderson Prichard Oil Corp. of Oklahoma City which for years has been doing a tank car business in rubber and other solvents in the Akron district and also had a little less-than-carload-lot distribution through a local jobber.

The Anderson Prichard set-up in general outward appearance looks different from a gasoline bulk storage plant only in the number of pipes but the construction is a great deal more intricate because the piping and manifolding is such that from eight basic stocks an almost endless number of solvents can be blended to meet specific requirements.

The plant has four 20,000-gallon tanks, each with two 10,000-gallon compartments. Each compartment is equipped with a Liquidometer which also serves as a meter in blending large quantities of solvents. There also are two meters which measure the naphthas as they are pumped into or out of the storage tanks.

The plant has 75 2-inch valves in its tank and manifolding systems, and hundreds of feet of 2-inch pipe. All valves are set with the stems down so that any leak may show up quickly and be repaired.

There is a 20 by 40-foot fabricated steel building which serves as office, garage and barrel filling house, but larger quarters are contemplated. Solvents are blended and barreled for the industrial trade of the northwestern quarter of the United States and eastern Canada. It is not unusual for an entire carload of special solvents to be shipped from the Akron plant to some user outside the Akron district. Shipments go out daily in l.c.l. lots.

Supplies are received in tank cars from the Anderson Prichard refinery in Oklahoma, so there is considerable freight saving in serving the smaller users of solvents from the Akron plant rather than direct from the refinery.

The plant has one 700-gallon tank truck for use in the Akron rubber district. Besides the smaller rubber factories, the truck transports solvents to paint and varnish works, cleaning plants, and other industries. Galvanized drums are filled with an automatic filler.

The plant is in charge of Bruce Dodd, who has represented the company in Akron for several years. Mr. Dodd also looks after the tank car sales as well as the jobbing and special sales in the territory the plant serves.

The plant's unloading spur is across a small valley from the bulk plant. The unloading pump is placed at the lowest point in the line and after a tank car is unloaded the line is bled so there will be no contamination of various kinds of solvents. After reaching the storage tanks there is a separate system of pipes for each solvent.

Jack Nourse Breaks Wrist At Kansas Meeting

WICHITA, Kan., April 17.—Jack Nourse, prominent oil man and head of the Nourse Oil Co., Kansas City, broke a bone in his left wrist while arranging an exhibit for the Kansas Oil Men's Association convention here today.

Mr. Nourse was on the running board of a taxi, bringing some signs to the hotel. A gust of wind blew open the door. To break his fall to the pavement he put his left hand back. Mr. Nourse is left handed. The bone was set and Mr. Nourse remained for the convention. His wrist will be bandaged for about three weeks.

Committee Report Is OK'd By U. S. Agencies

WASHINGTON, April 21.—The report on gasoline supply and demand of the Committee on Petroleum Economics made public April 14, is really a report by every branch of the government that has anything to do with petroleum and its products.

Between March 25, when the report was presented to Secretary of the Interior Wilbur by the committee, and April 14, every agency having any knowledge on the subject examined the report critically. Every member of the Federal Oil Conservation Board, its technical committee, and many in the Bureau of Mines and Geological Survey studied it with a view to finding any errors in its text, figures, or logic. It is understood that only one change was made, and that in the language employed in one part, which it was believed, did not present the intended meaning as plainly as possible.

Relatively small reaction from the refining industry has come to the attention of Secretary Wilbur since the report was published, and that has been favorable.

There is no thought now of the oil board calling on the committee later to make another report, either a new one or a supplement to this one. The prime object of the board was to advise the industry, as nearly as might be possible, what the demand would be for the principal products and what amount of crude, in its estimation, would be needed, together with a draft on stocks, to meet the demand. The purpose of the report was the education of the industry to the point it would realize that conservation by prudent and sane use of the crude in and above the ground would be to its benefit whereas forced production and manufacturing of gasoline would react disadvantageously to both the industry and the country.

The thought in Washington now is that the committee having supplied the figures which in its judgment, the industry should observe, there is nothing for it to do but to hope that the industry will observe the estimates and correct them if developemnts indicate errors.

It is felt that no means can be found to cut the state's production further in the face of the obstacles encountered recently by the Texas division of the Mid-Continent Oil & Gas Association. It failed to impress Governor Moody of the importance of seeking curtailment through cooperative efforts. It is felt that all that can be done now is to discourage unnecessary development of producing territory.

In Oklahoma the concurrence of recommendations in the report with the voluntary proration progam of operators was pointed out. The report suggested for the rest of 1930 in Oklahoma of 655,000 barrels daily average. Daily average output for the week ending April 12 was 665,000 barrels.

In California some independent operators were of the opinion that California should be allowed to produce as much oil as Oklahoma or Texas. The committee's report suggests 610,000 barrels daily average for California the rest of 1930. The operators were antagonistic towards a further curtailment program while importations of foreign crude continue. The allowable figure of 610,000 barrels is just about the figure arrived at in the voluntary curtailment efforts of major operators in California.

Little Comment From Operators On Findings in Report

CLEVELAND, April 21.—Little comment seems to have been occasioned in the three flush production territories of Oklahoma, Texas and California by the report of the Committee on Petroleum Economics, according to a canvass made by NATIONAL PETROLEUM NEWS editorial men.

In Texas, where the committee suggested allocation of production on the basis of 750,000 barrels daily average, as against actual production there of 818,000 barrels daily average for the week ending April 12, some operators felt that the committee might better have allowed the state the 78,000 barrels it allocated to general withdrawal of stocks from storage.

Railway Fuel Men To Meet

CHICAGO.—The 22nd annual convention of the International Railway Fuel Association will be held at the Hotel Sherman, Chicago, from May 6 to 9. Railway fuel purchases on Class I roads total nearly $400,000,000 a year in the United States, or 30 per cent of the direct expenditures for materials and supplies, according to E. I. Woodward, publicity director.

One of the sessions will hear a report of the committee on oil locomotive firing practice, and another session a report of the committee on storage of oil and coal.

The Lion Oil Refining Co.'s plant at Eldorado, Ark.

Review of Late Production News

DAILY average production was on an even basis the past week compared with the previous week. It showed a decrease of but 250 barrels for the week ended April 19 when output was 2,560,900 barrels daily average, according to the American Petroleum Institute.

Crude oil imports gained 25,570 barrels, to 165,285 barrels daily average the past week. Total new crude supply was 2,726,185 barrels, compared with 2,700,865 barrels the previous week.

California and Oklahoma again showed the largest changes. Oklahoma production decreased 7150 barrels, 3700 barrels of which were in Oklahoma City and 2500 barrels in East Earlsboro.

Voshell pool in Kansas declined 7700 barrels.

California output increased 10,200 barrels. Santa Fe Springs rose 6500 barrels on daily average and Elwood-Goleta 2000 barrels.

Eastern production increased 3000 barrels.

California

INTERESTING completions and promising showings from the core barrels of important wildcats claimed the spot light of California oil operators during the past calendar week.

Penetration of a commercially productive high gravity oil sand at Potrero, southeast of Inglewood, Cal. raised the production for that area to 2400 barrels of oil averaging better than 35 gravity.

Considerable excitement was centered in the San Joaquin Valley where projects drilling at critical depths in Kern county prepared to make production tests. Unless additional conservation agreements can be formulated so as to bind operators drilling on fee land at Kettleman Hills several wells will be completed prior to June 1.

Three additional projects due to be completed in the tidelands off shore from Elwood before May 1 are expected to boost that field's potential production to over 110 000 barrels per day, making it one of critical areas of state notwithstanding the voluntary cooperative plan of curtailment.

Daily average production of crude oil in the state was estimated to have increased 13,800 barrels during week ended April 19 to give a total of 624,900 barrels. Although a majority of operators at Santa Fe Springs continued to observe the restraining order limiting natural gas production to 304 million cubic feet of gas per day, others in the field relieved the excessive pressure on their wells with the result that this field's daily production increased nearly 6000 barrels.

Current production in this country by pools is found on page 113.

Texas, New Mexico, Louisiana

DAILY average production of the Judkins area, in Ector county, the principal West Texas area now in the ascendancy of development, has reached to approximately 9500 barrels. Thirty-odd wells drilling will influence further production increases this spring and summer, possibly making necessary some steps toward prorating practice in the field. Other flush areas of West Texas continue on the prorating bases in effect for months.

In the Lea-Lynch area of Lea county, New Mexico, west of the Hobbs district development, Shell Petroleum Corp.'s A-1 state test, in 32-18S-36E, cored oil saturated sand at 3138-3144 feet, where it flowed 67 barrels in five hours. It made 3,000,000 cubic feet of gas at the shallower 2767-foot level.

The Shell's No. 1 Stephens wildcat on a 117-acre tract in the I. D. Owen survey, northwest of Larue, in Henderson county, East Texas, had a small gas show at 2964-2980 feet. It was last reported drilling ahead below 3020 feet. Louisiana operations were of local importance only.

Oklahoma-Kansas

PAYNE county, Okla., had the most impressive wildcat in the Mid-Continent during the past week. Making 1825 barrels from the Misener sand it opens a new area near the town of Orlando. The state now has a deep drilling well in Harper county that would get attention even in California. It has found nothing but subsurface information as yet, but 8420 feet is an interestnig depth anywhere.

The southeast boundary of the Oklahoma City pool was moved down a bit by a new producer and a dry hole a little over a mile further south, indicates that the stretching process in that direction is just about over. The potential for the field moves upward, however, and the new figure recently given out places it at 1,350,000 barrels. By July this figure is expected to reach 2,000,000 barrels, as there are a large number of wells due in before that time.

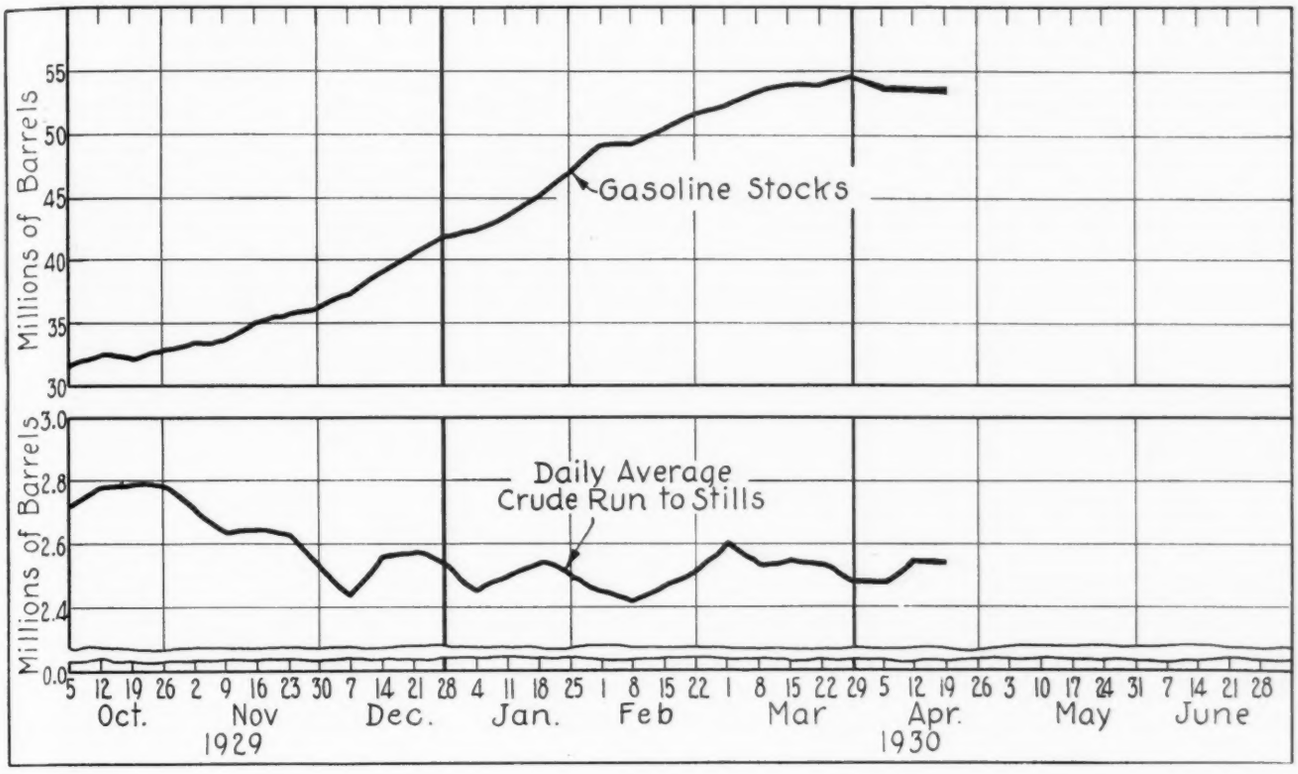
The Texas Panhandle and Kansas had no new developments of outstanding interest. Wildcats in both places were just moving along though some are reaching important depths.

Welding Book Published

CHICAGO.—The seventh edition of The Welding Encyclopedia, edited and compiled by L. B. Mackenzie and H. S. Card, is off the press. It contains 540 pages, 200 pages of which are devoted to definition and discussion of words and terms used in welding literature. There are treatises on gas, arc, resistance and thermit welding, and the applications of welding to pipe, tanks boilers and structural steel. There are also chapters giving up-to-date information on some of the newer applications of welding, such as aircraft welding, machine parts welding, and so on.

The book is published and sold by the Welding Engineer Publishing Co., 608 S. Dearborn St., Chicago. Price is $5.

U. S. Crude Runs and Gasoline Stocks as Reported Weekly by A. P. I.



U. S. Gasoline Stocks Reduced 431,000 Bbls.

By Telegraph

NEW YORK, April 22

GASOLINE stocks at U. S. refineries reporting weekly to the American Petroleum Institute were reduced 431,000 barrels in the week ended April 19. Total stocks on that date were 53,477,000 barrels.

Crude runs were increased 10,800 barrels daily average to 2,552,300 barrels per day. Texas refiners increased their crude runs 23,000 barrels daily average in the week and California refiners increased their throughput 15,400 barrels per day. An increase of 5000 barrels daily average was made by Indiana-Illinois refiners.

Compensating partially for the huge increases in Texas and in California, refiners on the East Coast reduced their runs 28,000 barrels daily average during the week. A cut of 9300 barrels per day was made by Appalachian refiners, 2000 barrels by Louisiana-Arkansas refiners and 700 barrels by Rocky Mountain refiners.

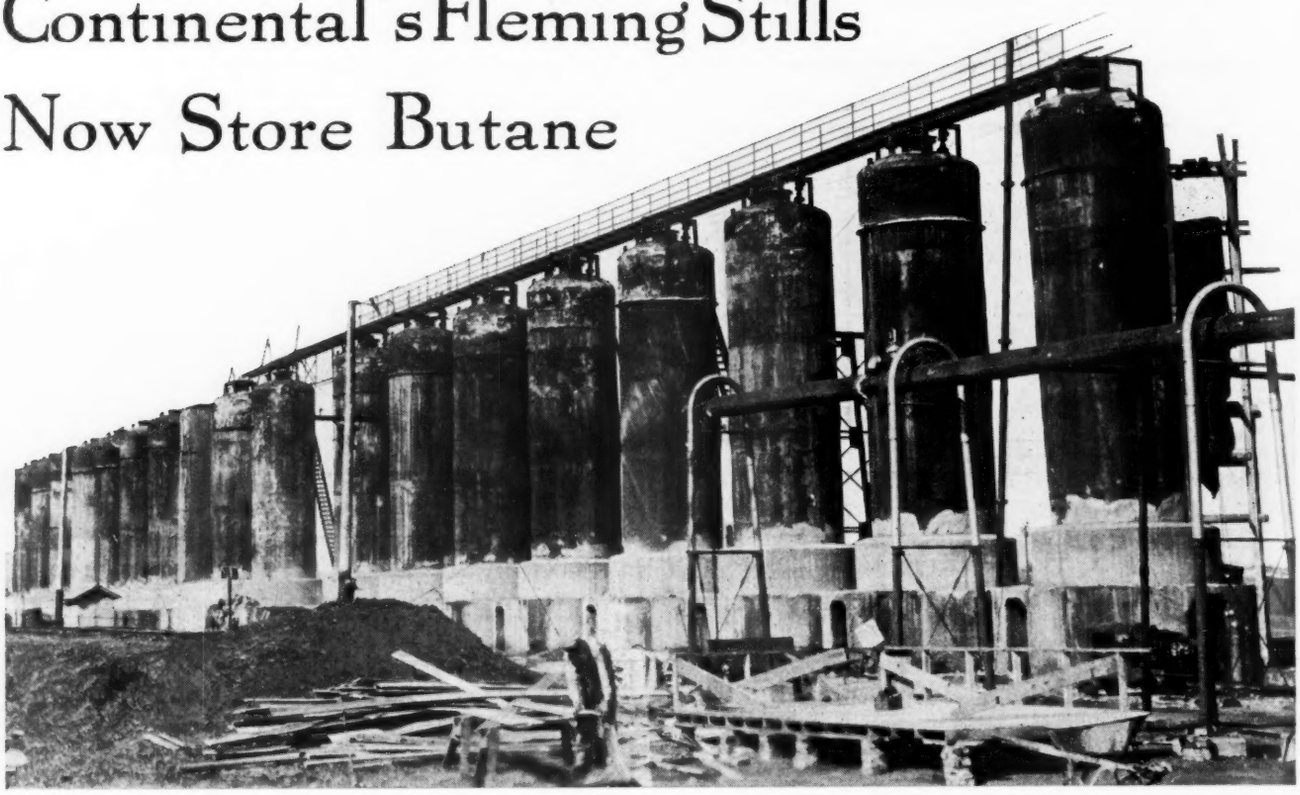
The draft on gasoline stocks was not confined to one or two districts as has been the case in earlier weeks this year when there have been reductions. With the exception of Oklahoma-Kansas and Louisiana-Arkansas groups, every major division showed some reduction in stocks. In Indiana-Illinois the increase in storage was only 33,000 barrels and in Oklahoma-Kansas the increase was only 10,000 barrels.

California refiners reduced gasoline stocks 121,000 barrels during the week, East Coast refiners 134,000 barrels and Rocky Mountain refiners 108,000 barrels.

Current Refinery Operations

Districts	Per Cent Capacity Reporting	Daily Average Crude to Stills (Barrels) Week Ended		Per Cent of Reporting Capacity Operated Week Ended		Stocks (Thousands of Barrels)			
		Apr. 19	Apr. 12	Apr. 19	Apr. 12	Gasoline Apr. 19	Gasoline Apr. 12	Gas & Fuel Oil Apr. 19	Gas & Fuel Oil Apr. 12
East Coast	100.0	452,900	480,900	74.8	79.4	9,284	9,410	6,632	6,538
Appalachian	91.0	87,800	97,100	75.3	83.3	1,885	1,926	775	725
Ind.-Ill.-Ky	99.5	330,000	325,000	87.8	87.6	8,769	8,736	3,338	3,188
Okla.-Kans.-Mo	89.1	327,800	320,200	79.6	77.8	4,401	4,391	3,731	3,697
Texas	90.4	564,100	541,400	79.2	76.0	7,819	7,875	10,279	10,463
La.-Ark	96.8	168,200	170,100	64.2	64.9	2,726	2,748	2,052	2,068
Rocky Mountain	93.6	59,300	60,000	42.6	43.1	2,863	2,971	1,051	1,060
California	99.3	562,200	546,800	63.1	61.3	15,730	15,851	108,179	108,106
Total U. S.	95.6	2,552,300	2,541,500	72.6	72.4	53,477	53,908	136,037	135,845
Texas (Gulf Coast)	99.4	422,500	395,800	80.7	75.6	6,792	6,765	7,675	7,884
La. (Gulf Coast)	100.0	104,400	105,900	70.8	71.8	2,361	2,377	1,184	1,213

Continental's Fleming Stills Now Store Butane



PONCA CITY, April 19

A BATTERY of 18 Fleming stills in the Continental Oil Co.'s plant at Ponca City is being converted into storage for stabilized gasoline recovered from Dubbs pressure distillate. As this product will be composed principally of butane and pentane, the low vapor pressures of these products at atmospheric temperatures will leave the old still shells an ample safety factor as storage tanks. Each still, or tank, as it should now be called, will hold some 400, giving the entire battery some 7200 barrels capacity.

The shells are ten feet in diameter, by 30 feet high. They are to be scraped, cleaned, and painted. All openings save those required for pressure relief valves, input and output lines will be closed up. It has not been decided yet whether or not the doors at the bottom of the shells once used for coke removal will be closed up.

These old stills gave quite a record behind them. They were first placed in operation in October, 1922, and are one of the largest installations of their kind. From the time they were first put on stream until they shut down for the last time in July, 1929, they charged 8,871,188 barrels of gas oil. From this charge they produced a total of 4,581,683 barrels of pressure distillate. The stills served their productive life without an accident being charged up against them.

Mid-Continent Engineers Meet May 23-24

TULSA, April 19.—Group papers, containing the finding and recommendations of a number of experienced oil field engineers, will be presented at the spring meeting of the Mid-Continent District, American Petroleum Institute, Division of Production, in the Mayo Hotel here May 23 and 24.

J. R. McWilliams, Skelly Oil Co., Tulsa, district chairman, in announcing the program, said it was the opinion of those in charge that group papers, prepared by several experts and presented by one of them as representative of group study, is superior to papers prepared by individuals.

The papers to be presented and those collaborating are:

"Weighing Wells"—E. A. Carr, Pure Oil Co.; R. M. Carr, Sinclair Oil and Gas Co.; H. D. Collins, Gypsy Oil Co.; F. B. Hall, Tidal Oil Co.; R. R. Hawkins, Texas Co.; F. W. Robinson, Carter Oil Co., all of Tulsa, and C. V. Sidwell, Amerada Petroleum Corp., Seminole, Okla.

"Mud Fluids"—R. W. Bond, Shell Petroleum Corp.; T. H. Rakestraw, Gypsy Oil Co., both of Tulsa; H. F. Beardmore, Indian Territory Illuminating Oil Co., Bartlesville, Okla.; R. S. Cartwright, Prunty Drilling Co., Ponca City, Okla.; and Arch Haynes, Haynes Drilling Co., Oklahoma City.

"Some Recent Developments in Deep Well Pumping Methods"—R. W. Bond, Shell Petroleum Corp.; C. C. Carlyle, Prairie Oil and Gas Co.; R. R. Hawkins, Texas Co.; D. L. Trax, Gypsy Oil Co., all of Tulsa; E. H. Griswold, Continental Oil Co., Ponca City; Ed Guidinger, Phillips Petroleum Corp., Bartlesville; and L. S. Thompson, Carter Oil Co., Seminole.

"Oil Treating Methods"—P. L. Guarin, Shell Petroleum Corp.; R. R. Hawkins, Texas Co.; R. R. MacDonald, Shaffer Oil Co.; J. R. McWilliams, Skelly Oil Co.; C. V. Millikan, Amerada Petroleum Corp.; Chas. Prather, Gypsy Oil Co.; F. W. Robinson, Carter Oil Co.; R. W. Spencer, Barnsdall Oil Co., all of Tulsa; and L. A. Ogden, Empire Companies, Bartlesville.

"Good Practice on Lease and Well Connections"—R. W. Bond, Shell Petroleum Corp.; R. M. Carr, Sinclair Oil and Gas Co.; J. R. McWilliams, Skelly Oil Co.; F. W. Shelton, Reiter-Foster Co.; L. A. Summers, Barnsdall Oil Co., all of Tulsa; C. M. Copeland, Comar Oil Co., Tonkawa, Okla.; K. A. Covell, Indian Territory Illuminating Oil Co., Bartlesville: and R. E. Kollar, Carter Oil Co., Seminole.

The committee in charge of the program consists of:

W. K. Whiteford, Barnsdall Oil Co.; R. W. Bond, Shell Petroleum Corp.; R. R. Hawkins, Texas Co.; R. M. Carr, Sinclair Oil & Gas Co., all of Tulsa; E. H. Griswold, Continental Oil Co., Ponca City; and K. A. Covell, Indian Territory Illuminating Oil Co., Bartlesville.

Officers are to be elected at this meeting.

Industry Has Ample Statistical Data To Balance Supply and Demand

By Warren C. Platt
EDITOR NATIONAL PETROLEUM NEWS

(Presented before National Petroleum Association, Cleveland, April 23-24)

IF THE oil industry cannot balance its supplies of crude and refinery products with demand this year, then it probably never can. Instead of saying "can" we really should say "will" because all that is lacking to bring about the balance is courageous and intelligent will power of the industry.

This is the big problem and one might almost say largely the only problem before the industry at the present time. A lot of smaller problems however are related to a solution to this major problem.

That the oil industry can fail in solving this problem seems unbelievable in view of all the following forces and factors set up and working to this laudable end:

1—The federal government through the Secretary of the Interior and the oil conservation board, advising and even beseeching the industry to restrict output.

2—The state governments of Oklahoma, Texas, Kansas and California operating and expanding legal machinery in aid of the oil industry.

3—The example set by the government's efforts to prevail on the farmers to plant less and make more money.

4—The example of other industries, both good and bad.

5—In addition to all the wealth of accurate figures which the federal and state governments are giving us on our business, is now the accurate weekly summary of refinery output and stocks gathered from the entire industry by the American Petroleum Institute. To check with this we have from the same body each month reasonably up-to-date figures on gasoline consumption by states, backed up by output of and registration of automobiles.

6—The example of several groups of refiners, notably in the Mid-Continent field who for some years have done an excellent job—barring a few slips—of keeping an intelligent weather eye on weekly stocks and shipments at their own plants.

There is most evidently no reason at all why the industry can't get in balance this year and stay in balance. However, it is a job of education. Each man should strive to educate himself and then his friends and associates and then put the fruits of his education into practice in his own production, in his refinery and in his marketing.

Each oil man should study the facts and figures on the current situation, no matter what end of the industry he is in. He must study the whole picture from well to the consumer to get a true idea. And I say he must STUDY, not just skim over the figures, nor put them aside until another day, or pass up crude stocks and production, because he doesn't own an oil well.

Per Cent of Gasoline Output Capacity Required to Meet Suggested 1930 Schedule And Comparison with January and February Operations.

	Average Per Cent of Capacity Required	Per Cent of Gasoline Capacity Utilized January, 1930	Per Cent of Gasoline Capacity Utilized February, 1930
East Coast	84.63	88.78	82.07
Appalachian	76.00	63.94	68.49
Indiana-Illinois	87.29	81.13	79.28
Oklahoma-Kansas	72.54	62.79	65.19
Texas-La.-Ark	74.28	72.54	81.81
Rocky Mountain	46.61	36.29	40.62
California	69.57	71.49	69.43
United States	74.83	71.55	73.45

Figures—statistics—are not easy nor always pleasant reading but they are the vitals of a business. This country is now deluged with figures on business but, from our editorial contacts, we sometimes wonder if much of them are read, let alone studied. Publishers can dish them up with graphs and make them more palatable but even then it is up to the oil man to sit down and try to figure out what they mean to his business.

In view of the necessity of studying figures, I shall take you through a lot of them, but almost all set forth quite clearly and plainly on graphs and charts. After thus showing you in a nut shell what the present status of the oil industry is, I shall wind up with a refining schedule for this year which is substantially the one announced recently by Secretary Wilbur's committee but broken down to refining groups. The schedule will be quite profitable to take.

What so many oil men don't know is the tremendous rapid growth of new refining districts. We think of the Mid-Continent field, largely Oklahoma and Kansas, as pretty much the oil and refining industry. This is due to human's natural blindness to new facts and probably to our using Tulsa as a headquarters in all trips to the west.

But Oklahoma and Kansas are not only down in oil production in relation to the rest of the country but those two states are almost in fifth place as a refining center. Any week now may find them there from fourth place. Indiana and Illinois, the Chicago refining district largely, are charging to stills within a few thousand barrels as much crude oil now as the once mighty Oklahoma-Kansas district. And the Indiana-Illinois district is really making the price on gasoline and other products for the central portion of this country rather than Oklahoma-Kansas, or "Group 3."

The accompanying chart (Fig. 1) probably will surprise the average oil man because of the simply tremendous growth of Texas-Louisiana-Arkansas as a general refining district. These three states are linked together in these figures for the purpose of checking against certain consumption districts later on. This district has the biggest charges to stills of any in the country. California comes second and the East Coast—chiefly the refineries around Philadelphia, New York and Boston—third. These districts are continuing to grow and to have a greater influence on the markets. The Texas-Louisiana-Arkansas district probably has escaped the attention it deserves because so much gasoline from there has been exported. In recent years it has been supplying half our exported gasoline.

The Oklahoma-Kansas refiners have been making only slight gains in output in recent years because they have been steadily pressed back in the mar-

keting territory by the newer and faster growing refining groups, that had the advantage of better location or cheaper crude.

The East Coast district has not increased in the last year because the companies there drew any extra supplies needed from the Gulf coast country, water transportation to New York proving much cheaper than pipeline transportation. This lack of demand for crude by pipeline on the Atlantic Coast is making available large quantities of crude for refineries inland at Cleveland, Toledo, Detroit and Chicago.

Align a New Battleground

This realigning of the oil industry's refineries and means of transportation is making Western Pennsylvania and Ohio probably the most hotly competitive and complex battleground for gasoline gallonage in the country. Here can be a meeting of gasolines from practically every refining district in the country. It is a battle ground that, if not fought over intelligently and conservatively, can do much to wreck the gasoline prices of the country. An observer at the present time cannot be at all certain that the battle is going to be intelligently managed. There are signs of serious trouble for the oil industry right here in this wealthy, manufacturing and populous territory, a territory best able to pay a reasonable price and that in cash for its gasoline.

This Ohio-Western Pennsylvania territory today is receiving gasoline made in California and Texas, which comes around to the Atlantic coast by boat and is then shipped by rail and pipe line inland. It is receiving gasoline by rail from Louisiana and Arkansas, from North Texas and some from Oklahoma but those last refiners have cannily remained out of this territory for the most part rather than have to give their gasoline away in a price war. This territory is also supplied by refineries running on pipeline crude at Chicago, Toledo, Cleveland and other refining points nearby.

This territory, particularly the Ohio part of it, has for years been a dumping ground for other refining districts, due to the policy of a former management in the Standard Oil Co. of Ohio, of maintaining a tank wagon price based upon crude and all manufacturing and transportation costs and disregarding the exceedingly low tank car prices in various refining markets particularly the Mid-Continent.

The result was that competition thrived on these low prices and grew at a great rate, all at the expense of the old company. Independent marketers started up to the number of some six or seven hundred. Service stations floated in on the wave of gasoline, manned oftentimes by individuals who thought just to be in the oil business was to make money.

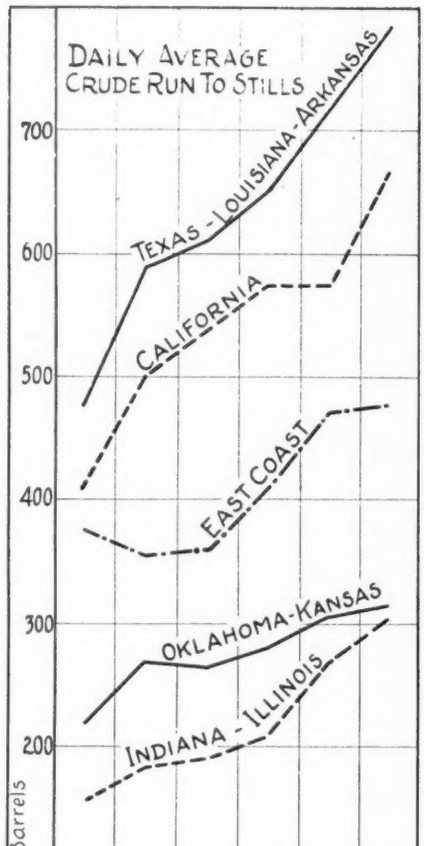


Fig. 1—Daily average crude runs at major refining groups of the U. S. since 1924

Then a change came in the management of the Standard of Ohio two years ago. The new president stopped the rout by basing his prices upon the tank car market, whatever that was. Competition quit coming in and as margins continued narrow some old competitors began dropping out. The new president rejuvenated the company's refineries and increased their output, started an advertising campaign, put in a lot of fine new marketing equipment, new employes and new products and went after business hot and heavy. And he got it. This is one of the best comebacks of a water logged company in the oil business.

Now its very success has seemingly started some grander ideas in oil company officials' minds and perhaps the ideas are not based upon a true picture of the situation. If not it will be just too bad for the oil industry. In coming back the Standard of Ohio has increased its business from doing 23.5 per cent of the state's gallonage in 1927 to 29 per cent in 1928 and 37 per cent in 1929, according to the state gasoline tax reports.

In the past two years the company has taken almost all the new business in the state. In 1928 the total increase in gallonage in the state was 90,000,000 and of this the Standard took 69,000,000 gallons. But last year—1929—the total increase in gallonage in the state was 93,000,000 and of this the Standard not only took the whole 93 millions but 10 millions in addition, an increase for the company of 103,000,000 gallons. Just who lost the 10 millions we have not had time to ascertain from more detailed study of the records but that some oil companies actually lost business is evident and if any of then gained they did so by taking business away from other competitors. Just what goal the Standard of Ohio has in mind in the way of total gallonage we do not know, but obviously a growth such as last year cannot be continued without some bitter fighting from competitors.

Now into this extremely competitive and relatively small area are coming two pipelines for gasoline only. That of the Standard of New Jersey, the Tuscarora, is already operating. Its capacity is 25,000 barrels a day but just how much gasoline is coming through it the company does not say. This line, of course, is being used to supply a strip of territory clear across Pennsylvania but at the same time it is a new and an additional source of supply for this territory. Presumably the line, like all pipe lines, must be run pretty much to full capacity to make any money, so it is reasonable to assume that as soon as possible the line will be operating to capacity, if it is not now. How much of this line's gasoline may get into the Youngstown and Cleveland districts remains to be seen but unquestionably some of it will, and what doesn't get into Ohio is taking the place of other gasoline which now must seek an outlet in Ohio.

Sun Pipe Line to Add More Gasoline

Then we have building to Pittsburgh and Cleveland the gasoline pipeline of the Sun Co. of Philadelphia to have 15,000 barrels a day capacity. How much this line is planned to deliver to Ohio the company has not said but the company has gotten control of numerous service stations in Cleveland and nearby territory and is engaged in a big newspaper advertising campaign.

Taking the figures—the New Jersey company's line has a capacity of nearly 400,000,000 gallons of gasoline a year; the Sun Co.'s line a capacity of 230,000,000 gallons a year. Here is a total of more than 600,000,000 gallons of gasoline, presumably, that will come into central and western

Pennsylvania and Ohio within the next year.

The total gasoline consumption of all Pennsylvania is a little more than 1,000,000,000 gallons a year and of the western part of the state most likely to be served by these lines, the consumption is probably 350,000,000 gallons or thereabouts. The total gallonage of Ohio is 950,000,000 gallons a year. We therefore have a probable consumption within easy reach of the western termini of these two lines of 1,260,000,000 gallons a year.

Into this Cleveland-Pittsburgh area these two lines alone threaten to throw half the gasoline to be consumed in the area.

Of course it cannot be assumed that that will be the case. The heads of the two companies certainly would not do such a foolish thing as that and besides they will be dropping off gallonage all the way along the line. But nevertheless, the tendency will always be to push gasoline to the furthest end of these lines and to do so at the full capacity thereof and then to sell it.

Will Refiners Try to Keep Pipe Lines Filled

One may well ask here if the inclination may not be, as has been the case at refineries and in other businesses, to keep the line going full blast in order to keep costs down and even though the market may not be absorbing this gasoline very freely, to force it on the market anyway preferring to take a little loss on the marketing end, in order to get even on the entire operation from the Atlantic coast to the consumer?

But to get back to our figures, no matter how cautious the heads of these two companies are about shoving gasoline into this area, even to only a small per cent of their capacity, these lines can easily absorb all the year's increase in this territory. And if, in the meantime, the Standard of Ohio decides to try and take all of the increase, then what about it?

So much emphasis is given this Ohio situation because of its being a fair sample of how the industry seemingly disregards the fact that there is only going to be so much more gasoline consumption next year and no more, and also because of its big importance in the market structure.

The area of the Great Lakes has for some years now been becoming one of low price gasoline centers. We first had Chicago, due to competition of several refinery groups—Group 3, Louisiana and Arkansas and the Chicago area—for business. Then we had the Detroit and surrounding territory low price area which is still with us due to the same competitive factors plus the Toledo refining district. Now we have a refinery being built right at Detroit. We have had low price periods at Buffalo for the same reason and now we have the Cleveland and more or less general Ohio territory which probably will become a low price district. I say low price, but perhaps not unprofitable for those companies best able to market therein.

With this vast Great Lakes area more or less permanently established on a low price basis, one can easily imagine the influence all that enormous gallonage will have on the rest of the country.

All the foregoing is given as a statement of the situation rather than a criticism of the companies involved. Business progresses by taking full advantage of improvements and greater economies. The company that cannot keep abreast of the times is just out of luck. That may sound hard boiled but it is the history of business and will be that history as long as we have the competitive system in business. This system is ruthless as to the inefficient, the poorly located, etc. We may temper its ruthlessness but we can only temper it. We cannot stop it.

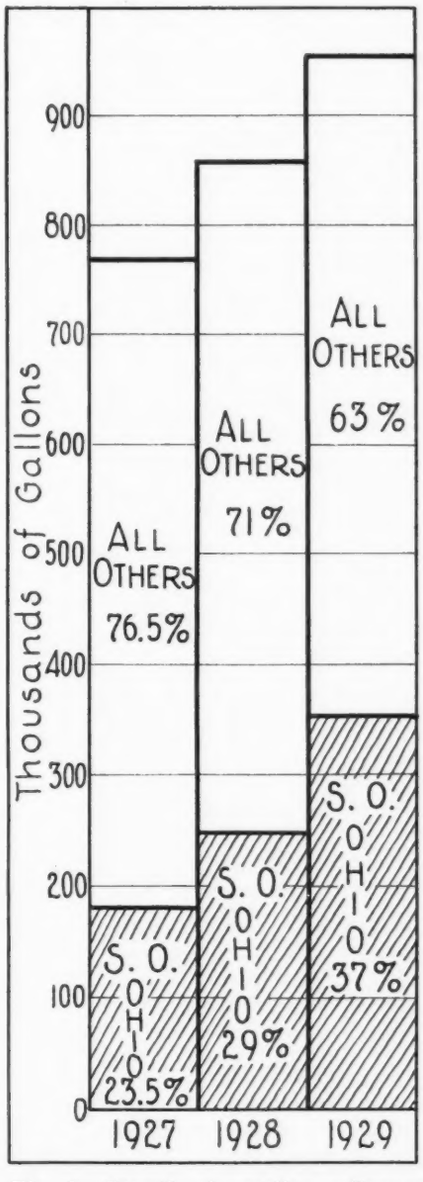


Fig. 2—Growth of gasoline gallonage in Ohio of the Standard Oil Co.

If running pipelines to Cleveland for transporting gasoline will give the people of this city their gasoline cheaper and at the same time make money for the stockholders of the oil companies involved, then the lines should be laid and operated or the public of Cleveland and Ohio will rise up and demand why. And if such lines can make new money for their stockholders, then if one company doesn't build them others will.

However there is also the larger picture involved. If by making use of a new improvement or economy too suddenly, much damage may be done a large number of other people and companies, then that use should be tempered with caution in order that the greatest good may be done the most people. The people of Cleveland may be entitled to their gasoline at the lowest price possible, but are they entitled to it at the expense of a gasoline war which may make thousands of stockholders not only in these but in other companies suffer and which may serve to reduce the pay of many thousands more of employes?

We can only argue in the abstract at the moment. Each company has its own good reasons for its acts. Time will tell who is right. But one thing can be emphasized most strongly at present, and that is the possibility for most serious price trouble in this western Pennsylvania and Ohio areas this year. Let us hope it is not a probability.

But already a price differential is being used by one of the invaders who is advertising his "premium" brand equal to his chief competitor's he says, at the regular service station price while the competitor replies that a "premium" brand not sold at a "premium price" can't be a "premium brand," hence buy his at 3 cents more. This may sound funny but it is fraught with serious possibilities because such a price differential for allegedly the same grade of gasoline is great enough to be a serious factor with the average consumer. Price wars have generally been started on much smaller differentials.

Refinery Capacity Enough to Supply Maximum Daily Needs

A check of U. S. refining capacity at the present time against probable gasoline requirements for this year clearly shows that we have sufficient capacity to manufacture in one day enough gasoline for our biggest gasoline day. In other words, as a whole, we do not need any reserve storage.

Taking the estimate of Secretary Wilbur's committee for demand we have an average demand of 1,306,000 barrels of gasoline a day in 1930 and against that we have a capacity

of 1,668,000 barrels a day or a surplus of capacity of 362,000 barrels a day over average needs. Table No. 1 gives the details as follows:

Table No. 1

	Barrels per day
*Gasoline Output Capacity of U. S. Refineries	1,629,000
1930 Imports (Estimate of Wilbur Committee)	39,000
Total potential Gasoline Supply	1,668,000
1930 Domestic Demand (Estimate of Wilbur Committee)	1,122,000
1930 Export Demand (Estimate of Wilbur Committee)	184,000
Estimated 1930 Demand	1,306,000
Ability of U. S. refineries plus importers to oversupply market	362,000

*Based on crude charging capacity as reported by American Petroleum Institute and gasoline yields for year 1929 as shown by U. S. Bureau of Mines.

We have undertaken to break down the refining capacity of the country as against the natural marketing areas for each refining group. The break down is rough at best but, in order to keep as close to the gasoline consumption tax figures—our only record of consumption—we have broken down the territories by entire states, with one exception. That exception is in the case of the socalled Appalachian marketing area, to make up which we took the western end of New York and allotted 33 per cent of the state's total gallonage to it and the western end of Pennsylvania and allotted 37.5 per cent of the state's gallonage and then took the east half of Ohio and allotted 62.5 per cent to it. Rough as this is it can serve as a reasonable guide to refinery operation because one error will likely compensate for another error. The grouping is as shown on the map (Fig. 3).

Table No. 2

Gasoline Consumption in Logical Marketing Areas of Various Major Refining Groups of U. S.

	1929 Bbls. per Day	Per Cent Increase over 1928	Estimated 1930 Bbls. per Day	Estimated Per Cent Increase over 1929
East Coast	273,047	18.95	295,959	8.39
Appalachian	108,444	19.22	116,134	7.09
Indiana-Illinois	203,534	13.52	220,151	8.16
Oklahoma-Kansas	143,992	10.26	154,729	7.46
Texas-La.-Ark	148,800	9.50	161,378	8.45
Rocky Mountain	24,285	8.02	26,504	9.15
California	115,200	14.36	126,597	9.89
Total U. S.	1,017,302	14.37	1,101,452	8.27

Gasoline Consumption in Logical Marketing Areas

Taking the logical marketing areas shown on the map we have prepared the accompanying table (Table No. 2) giving total daily average consumption of gasoline in each district in 1929, with an estimate of 1930 consumption in each group.

Data for 1928 consumption are based on state tax reports as compiled by the U. S. Bureau of Public Roads. From these reports it was found that 90.8 per cent of the gasoline going into domestic channels was reported by the state tax bureaus. To arrive at total demand in each group we therefore increased the taxed gasoline by 10 per cent.

The estimate of 1930 gasoline consumption in each area was based on the motor car registrations in each area, together with last year's tax figures which indicated the consumption per car in each state.

The estimate indicates an increase of 8.27 per cent in total domestic gasoline consumption in 1930.

Taxed Gasoline Consumption in Logical Marketing Areas

Table No. 3 shows total taxed gasoline in each of the logical marketing areas of major refining groups in total barrels per year with per cent of increase. The same sources were used as in the preceding table and the same methods used in making the 1930 estimate. The chief difference is that these figures show taxed gasoline only and hence represent only about 90.8 per cent of total domestic consumption in each area.

Gasoline Producing Capacity of U. S. Refineries

It has been said many times in the past few years that U. S. refineries have been built to a point where it is unnecessary to manufacture gasoline above consuming requirements in winter months to take care of peak summer demand.

To test out these assertions we have developed the figures in Table No. 4 which breaks down refining capacity and gasoline producing capacity of the U. S. into major groups corresponding with those used in U. S. Bureau of Mines statistics.

Crude charging capacity of each district has been taken from recent weekly bulletins of the American Petroleum Institute used in connection with that group's weekly report of refinery operations.

Gasoline yields were taken from 1929 reports of the Bureau of Mines. They are yields for the entire year.

Applying these yield percentages against crude charging capacity we have arrived at a theoretical gasoline output capacity for each district and the U. S. as a whole.

Ignoring exports and imports for the purposes of this table we have prepared an estimate of peak 1930 demand in the logical marketing area of each major refining group. This peak demand is the estimated daily average demand of each group for the months of July, August and September. It was arrived at in this fashion: From state tax reports the 3rd quarter gallonage of each group in 1929 was obtained and compared with the total year's gallonage to arrive at the per cent of business done in the third quarter last year. This per cent of business done in

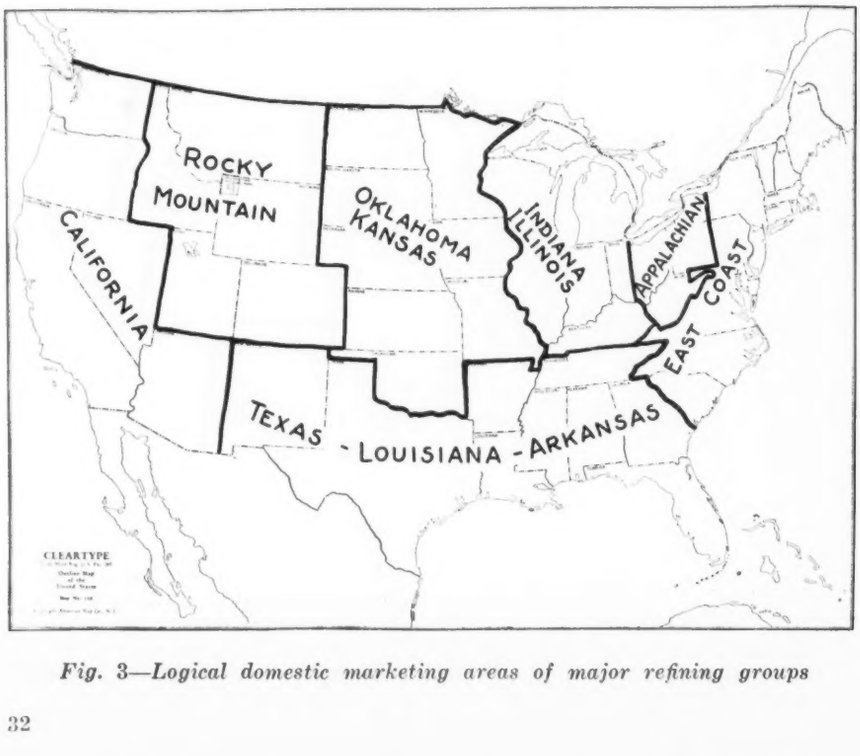


Fig. 3—Logical domestic marketing areas of major refining groups

the third quarter of 1929 was applied to our estimate of 1930 gallonage to arrive at the peak demand for this year expected in the third quarter.

Table No. 4 shows that Eastern Appalachian and Indiana-Illinois refiners will be unable to meet the peak demand when running at full capacity, the total deficit being 299,000 barrels per day.

On the other hand the western and southwestern groups have capacity to produce enough gasoline to meet all the domestic demand of their logical areas in peak periods and in addition have a surplus of 559,000 barrels per day. Thus they are able to meet the eastern domestic deficit and leave a surplus of 260,000 barrels per day.

The data contained in this table are shown graphically on the attached chart (Fig. 4). The solid black areas in eastern group columns represent the deficit in gasoline producing capacity, while the shaded area of western columns represents the surplus gasoline producing capacity.

At the extreme right of the chart we present a total of the eastern deficits compared with the total western surplus, the difference being the U. S. surplus available for export and storage. This surplus of course actually would be larger due to imports which also are not considered in this chart.

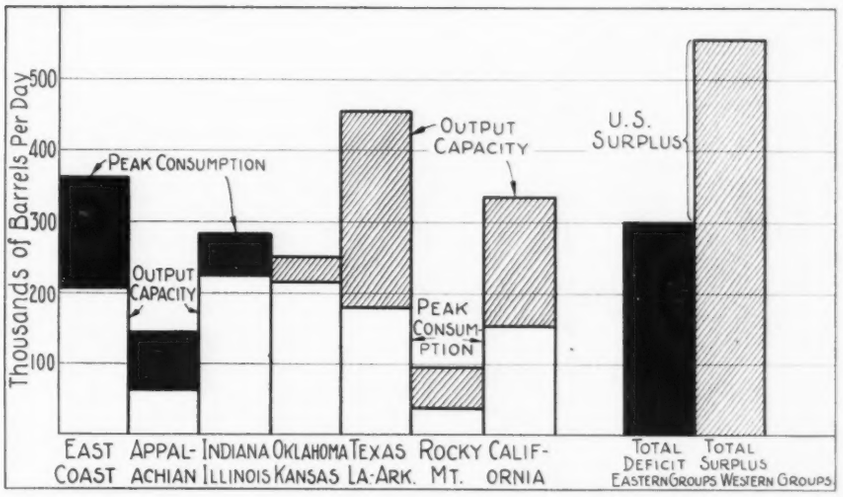


Fig. 4—Gasoline output capacity of major refining districts compared with estimated peak domestic demand in logical marketing areas. Solid black areas represent excess of estimated peak domestic demand over gasoline capacity. Shaded areas represent excess gasoline capacity over peak domestic demand in logical marketing areas

Table No. 3

Gasoline Consumption in Logical Marketing Areas of Refining Groups (Figures in Barrels)

	1928 Taxed Gasoline (Bbls.)	1929 Taxed Gasoline (Bbls.)	Per Cent Increase Over 1928	Estimated 1930 Taxed Gasoline (Bbls.)	Per Cent Increase Over 1929
East Coast	76,166,000	90,601,000	18.95	98,205,000	8.39
Appalachian	30,182,000	35,983,000	19.22	38,536,000	7.09
Indiana-Illinois	59,493,000	67,536,000	13.52	73,050,000	8.16
Oklahoma-Kansas	43,335,000	47,779,000	10.26	51,343,000	7.46
Texas-La.-Ark.	45,091,000	49,374,000	9.50	53,548,000	8.45
Rocky Mountain	7,460,000	8,058,000	8.02	8,795,000	9.15
California	33,426,000	38,225,000	14.36	42,007,000	9.89
Total U. S.	295,153,000	337,556,000	14.37	365,484,000	8.27

1929 Production and Consumption by Groups

Turning from the theoretical gasoline producing capacity of groups compared with peak demand we present a study of actual gasoline production and consumption by groups in 1929.

Table No. 5 gives gasoline output in barrels per day by groups and gasoline consumed in barrels per day in logical marketing territories in 1929, with the deficit and surplus. In this study we observe that the deficit indicated for 1930 for the three eastern groups on the basis of total capacity against peak demand is about the same as that actually experienced last year when taking actual production and actual average consumption for the year.

For the country as a whole we had last year a surplus over domestic requirements of 172,000 barrels per day. To this should be added imports of 24,000 barrels per day to give a total of 196,000 barrels per day.

Last year we exported 168,000 barrels per day, leaving a net surplus for the country of 27,000 barrels per day which was added to storage. In terms of barrels per day the amount seems small and yet for the year it was 10,000,000 barrels.

Data in this table have been reduced to graphic form in the accompanying chart (Fig. 5) which shows the deficit of eastern groups in solid black and the surplus of western groups shaded. At the right are two columns balancing western surplus and imports against eastern deficit, exports and additions to storage.

Suggested Gasoline Output Schedule for 1930

We have prepared a suggested schedule for gasoline output for 1930 on a daily average basis which is designed to meet fully the domestic and export requirements now expected and permit liquidation of the ten million-barrel increase in storage accumulated in 1929.

To prepare this schedule we took into consideration the increase in gallonage expected in the logical consuming territory of the three eastern groups which are not able to meet the demand. In each of these groups we suggest an increase in output sufficient to care for the increase in consumption.

In the case of California we suggest an output schedule which will permit refineries there to ship 24,000,000 barrels into coastwise trade (65,753 barrels per day) which was the amount of coastwise business this group of refiners suggested some months ago that it should have and

Table No. 4

Gasoline Output Capacity of U. S. Refineries by Groups Compared with Estimated Peak Domestic Demand in 1930 (July, Aug. and Sept.) in Logical Marketing Area. (Exports and Imports are not Considered in this table).

	Daily Av. Crude Capacity (Bbls.)	Gasoline Yield 1929 (Per Cent)	Daily Av. Gasoline Output Capacity (Bbls.)	Estimated Daily Av. Peak Demand in Logical Marketing Area (Bbls.)	Da. Av. Surplus Gasoline Capacity (Bbls.)	Daily Av. Deficit in Gasoline Capacity (Bbls.)
East Coast	605,700	33.5	203,000	362,000		159,000
Appalachian	128,100	47.5	62,000	142,000		80,000
Indiana-Illinois	375,000	59.0	221,000	281,000		60,000
Oklahoma-Kansas	462,200	54.1	250,000	215,000	35,000	
Texas-La.-Ark.	1,058,600	43.4	459,000	178,000	281,000	
Rocky Mountain	148,900	64.6	96,000	39,000	57,000	
California	897,400	37.7	338,000	152,000	186,000	
Total U. S.	3,675,900	44.0	1,629,000	1,369,000	260,000	

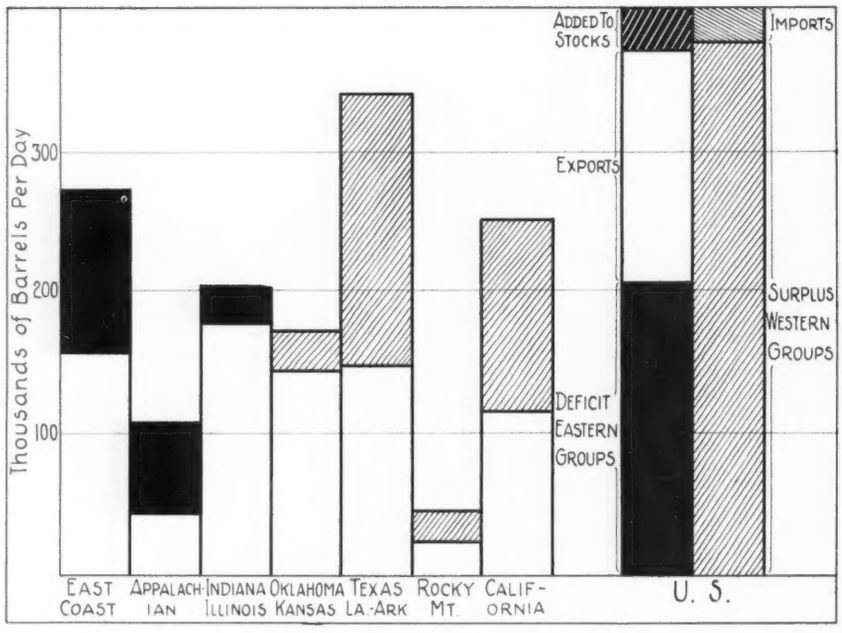


Fig. 5—Daily average gasoline production and consumption in logical marketing areas by groups in 1929. Black areas show deficit in gasoline production and shaded areas show surplus over domestic consumption in logical marketing area. At left is balance for U. S.

which is a little under last year. The schedule involves also 58,880 barrels of gasoline per day for export, which is 32 per cent of the expected exports from the U. S. and the share which California enjoyed in 1928. It provides for a consumption in logical marketing territory of 126,597 barrels per day as estimated and for a reduction in storage of 16,066 barrels per day.

In the cases of Oklahoma-Kansas and the Rocky Mountains we suggest a schedule of runs which will take care of increases in expected business in logical marketing territories and a decrease in stocks equalling the increase of 1929.

In the Texas-Louisiana-Arkansas group we suggest a schedule which will provide for a stock decrease of 4885 barrels per day (the 1929 increase), an export demand of 92,000 barrels per day (50 per cent of estimated export demand and the same percentage enjoyed in 1928) and a coastwise business of 92,448 barrels per day as well as the expected domestic demand in logical marketing territory of 161,378 barrels per day.

The schedule is presented in tabular form in Table No. 6 and is graphically presented in Fig. 6.

Table No. 6

Suggested Schedule of Gasoline Production by Groups in 1930

Designed to permit full supply of domestic and export demand and permit withdrawal from storage of 10,000,000 barrels (the amount added in 1929). Figures in Barrels per Day.

	Daily Av. 1930 Gasoline Output	Per Cent Change from 1929 Output	Daily Av. 1930 Consumption in Logical Marketing Area	Daily Av. Deficit	Daily Av. Surplus
East Coast	171,794	+8.39	295,959	124,165	
Appalachian	47,123	+7.09	116,134	69,011	
Indiana-Illinois	192,916	+8.16	220,151	27,235	
Oklahoma-Kansas	181,351	+6.02	154,729	.....	26,622
Texas-La.-Ark	340,941	—0.19	161,378	.....	184,448
Rocky Mountain	44,745	—0.60	26,504	.....	18,241
California	235,164	—6.38	126,597	.....	108,567
Total U. S.	1,218,919	+2.46	1,101,452	220,411	337,878
Net Output Surplus					117,467
Plus Estimated Imports					39,000
Net Surplus					156,467
Less Exports					184,000
Withdrawals from storage per day					27,533

Comparison of Schedule With February Actual

It should be interesting to compare the suggested schedule of operations for 1930 with what the industry actually did in February. This is done in Table No. 7.

It will be observed that the Texas-Louisiana-Arkansas group even in the low demand month of February was producing gasoline at a rate which would intensify the competitive situation in the export or eastern markets or add large amounts to storage if carried on throughout the year.

California was almost in line with the suggested schedule on a yearly average basis but any increase in operations during the peak demand months would result in storage accumulations during the year or competition in export or eastern business or all of them.

Other groups are somewhat below the yearly average suggested.

Table No. 7

Comparison of Suggested Gasoline Output Schedule with Bureau of Mines Report for February, 1930

	Gasoline Daily Avg. Feb. Output	Suggested Schedule
East Coast	166,607	171,794
Appalachian	42,464	47,123
Ind., Ill., Ky.	175,214	192,916
Okla.-Kans.	162,964	181,351
Texas-La.-Ark.....	375,500	340,941
Rocky Mountain	39,000	44,745
California	234,679	235,164
Total 1,196,428		1,218,919

Here then is one way for the refining industry to go and which offers reasonable assurance of reasonable profit for all, and at the same time a healthy tank car market which in turn will protect a healthy tank wagon market. Any material deviation upward from this suggested schedule is almost certain to result in trouble for one or more groups and for one or more marketing areas.

The troubles of past years have all been due to unbalanced production, refinery operations and marketing. A field of cheap crude has always brought a lot of really unnecessary refinery capacity which manufactured a surplus of gasoline which in turn broke the market. The refiner could not control the increase in crude but

Table No. 5

Daily average Gasoline Production by Refining Groups and domestic Consumption in Logical Marketing Areas in 1929. (Barrels per Day).

	Gasoline Produced	Gasoline Consumed	Deficit	Surplus
East Coast	158,496	273,047	114,551	
Appalachian	44,003	108,444	64,441	
Indiana-Illinois	178,362	203,534	25,172	
Oklahoma-Kansas	171,047	143,992	.....	27,055
Texas-La.-Ark	341,595	148,800	.....	192,795
Rocky Mountain	45,016	24,285	.....	20,731
California	251,184	115,200	.....	135,984
U. S. Total	1,189,702	1,017,302		172,400

he could have controlled his own output. Of course there always will be some people who will try to beat the game but in case they get too rough the remedy is to let the market go drastically to pieces for a while and these rough individuals will quickly learn their lessons.

The oil industry has spent a lot of time the past two years on the so-called code of ethics. The code is a fine thing but—it is not fundamental and never can be. What the code seeks to cure has come naturally from faulty refinery and field operations. If the refinery markets had been in balance we would have heard little complaint about leasing pumps and painting garages.

It is unfortunate that the effort started a year ago to educate the industry to keep itself in balance was dropped on an adverse comment by the U. S. attorney general. We always felt that the matter could have been so presented that no material objection could have been made to it from a legal standpoint. That effort should be revived at once and pushed to a successful conclusion. If the department of justice at Washington should think that sound business education is contrary to the constitution and the anti trust laws then the sooner the Supreme Court is asked to pass on that thought the better. If the Court should sustain such an idea then the government will certainly have to drop the farmer overboard, practically close up the department of agriculture, close up the department of commerce, kill the federal trade commission and cut short its activities in many lines, to say nothing of ordering our schools and colleges to "cease and desist" from imparting any knowledge to the business man. All of which is too ridiculous to consider.

Knowledge should be used. We have a wealth of economic information in this world, to gather and impart a large part of which the government has been most active. There can be no objection to putting this knowledge to work in the oil industry, as government is trying to make it work in farming.

We, in the oil industry, now have all the information necessary for carefully balancing our operations, save in crude production and there perhaps more than knowledge may be necessary. But on refinery operations and marketing practices we have the figures every week and every month that tell us whether we are going too fast or too slow. Those figures should be put to use by every one at once.

But above all, the fact should be driven home by the American Petroleum Institute, by all oil associations and by leaders of the business —yes even by the example of the latter—that there is practically nothing that we as oil men can do to increase or decrease the consumption of gasoline and that, therefore, he who would build and fire up an unnecessary still, who would build an unnecessary bulk station, service station or put out an unnecessary pump to take care of what he can easily know is more than his fair share of the gallonage, is contributing to make the industry unprofitable as well as his own operations unprofitable.

The oil industry is just what we make it, no more and no less.

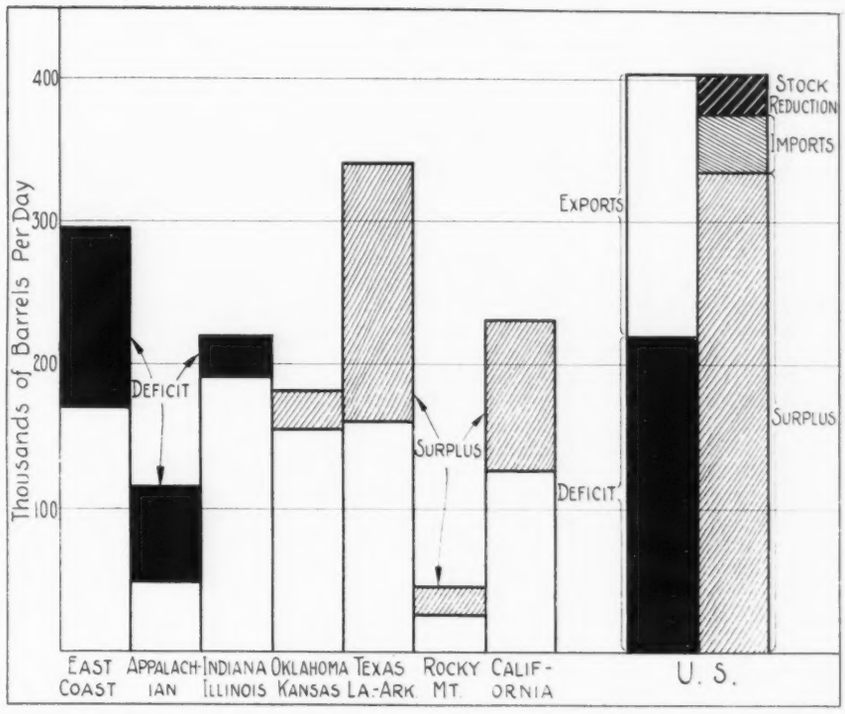


Fig. 6—Suggested schedule of gasoline output by groups for 1930 designed to liquidate 1929 additions to storage. At right is U. S. balance for all districts with exports and imports considered

Hoover Public Land Policy Unchanged by Decision

WASHINGTON, April 21.—No change is contemplated in the Hoover administration policy of refusing to accept applications for, or the issuance, of oil and gas exploration permits in accordance with the national leasing law, as a result of adverse decisions by the Supreme Court of the District of Columbia.

Appeal will be taken by the government to the Supreme Court of the United States. It will probably be years before decision is reached by the highest court. By that time conditions may have changed and the need for the present leasing policy passed.

Justice Bailey having determined, in his decision April 9 what the law on the subject was, Justice Siddons six days thereafter, awarded mandamuses in the cases of W. B. Pyron, of Los Angeles, Ethel McLennan and George G. Retherford, California applicants, and R. L. Paris of Artesia, N. M. The first named asked for an order directing Secretary Wilbur to accept his application and the others asked for orders requiring him to reinstate their applications.

Justice Siddons fully agreed with his colleague that neither President Hoover nor Secretary Wilbur could lawfully construe the national leasing law to make the granting of exploration permits discretionary, as Secretary Wilbur contended.

These decisions have no direct bearing on the restrictions that have been put on drilling in Kettleman Hills, California, under the agreement Secretary Wilbur has negotiated with permit holders and others whereby the permit holders are not seeking production in order to validate their leases in the allotted time. In effect, however, the permit holders are taking the word of Secretary Wilbur that he will extend their permits based on his interpretation of the law.

Notwithstanding the fact that the Supreme Court of the District of Columbia has decided that the administration's conservation policy as it affects public lands, is based on a foundation of no substance, Secretary Wilbur has had it written into bills pertaining to the lands of the Choctaw and Chickasaw Indians on the south side of the Red River. This was considered to belong to Texas until the Supreme Court of the United States decided that the south bank of that stream between the Arkansas line and the 98th meridian belonged to the Indians, and was hence under the administration of Washington.

Representative McKeown, of Texas, and Senator Thomas, of Oklahoma, have introduced bills authorizing the Secretary of the Interior to lease these tribal lands for petroleum development.

Solution of Refining Problems Possible Through Thermodynamic Principles

CLEVELAND

PRACTICALLY every process problem involving chemical or chemico-physical reactions now perplexing the oil refining industry can be solved with exactness and dispatch by the application, to the problem, of the principles of thermodynamics. This is essentially the opinion of G. C. Davison, trustee in charge of the department of scientific research of the National Petroleum Association, in his report of the activities of his department given before the association at its annual meeting here April 23 and 24.

According to Lewis[1] the science of "Thermodynamics deals with the laws and relationships which govern the quantitative transformations of energy of one sort into energy of some other sort during physical or chemical changes in a system."

In a practical way this science has been employed in various industries to determine what types of reactions may occur in different systems, that is, in different processes, and to determine the optimum conditions under which a certain or definite reaction may be carried out. Thermodynamics has been of inestimable value to the oil industry in developing and improving processes and in solving refining difficulties, in designing plant equipment to accomplish certain results.

Many prominent refinery chemists and technical men are aware of the handicap on the use of thermodynamic principles and formulae due to the lack of certain data on petroleum hydrocarbons which it is necessary to obtain before application of the laws can be made to particular problems. Several investigators have collected data on different substances, and have urged that the remainder of the necessary information be collected in order to aid the refiner in his attack on his problems.

Francis and Kleinschmidt[2] in a recent paper outlined the methods of application of these principles to practical problems, and pointed out the data needed to supply the research man with the information necessary for his work.

Francis and Kleinschmidt state that, with combinations of free energy equations, predictions may be made of the possibility of, and conditions for, proposed reactions. By plotting some of these equations similar predictions are possible by simple inspection of the graphs. According to these authors it is necessary to know the following thermodynamic properties in order to calculate the free energy of reactions at different temperatures:

1. The heat of reaction, which may be obtained indirectly from the heats of combustion, etc.

2. The change in free energy at some one temperature and pressure.

3. The specific heats, as functions of temperature, of all the reactants and of all the products.

4. If there is a change of state of any reactant or any product between the conditions mentioned in 2, and the desired conditions, then all the heats of fusion, vaporization, or transition involved, are required; and it aids greatly in checking calculations if vapor pressures of solids and liquids are known.

5. If high pressures are involved in an observed equilibrium or in the desired conditions the equations of state of the gases must be used to correct the pressures.

The authors, at the time of presenting the paper referred to, urged research men in the refineries to collaborate and collect the data still needed to complete our knowledge of these constants employed, and, upon suggestion, offered to outline the information that is needed, in order to in some measure systematize the obtaining of it.

The department of scientific research of the National Petroleum Institute has been giving attention to this phase of investigation, and has taken steps to formulate some plan for inaugurating the work, as well as to obtain the funds necessary to carry it on. Dr. R. P. Anderson, technologist for the American Petroleum Institute has signified the interest of that body in the matter, and its willingness to cooperate within the means available. Nothing definite has as yet been settled, however.

Mr. Davison's discussion of the accomplishments of the application of thermodynamic principles to the solution of problems in refinery technology, and in that of other industries gives a comprehensive view of the situation, and is here quoted in full as follows:

"If we wish to make a practical application of this science to our business, we must begin by obtaining certain definite physical constants. For example, we may have a substance, let us say, octane. The first thing we should know about this particular material is its heat capacity at different temperatures. Such heat capacity has been determined for a great many permanent molecules, but only a few of the many hydro-carbons have ever had this simple fundamental quality determined. It sounds simple, but first of all the substance must be isolated before its specific heat or heat capacity can be determined. This means considerable work and expense. We know the heat capacity for a few of our hydrocarbons, such as methane.

"Another very important physical constant which must be determined is the equilibrium constant. This is a definite physical quality which can also be measured by various processes, but especially by what is known as dissociation. Knowing these two definite physical qualities of any substance, it is then possible to deduce from them what are known as integration constants and to establish thermodynamics formulae for free energies, etc.

"After having determined these physical constants we then have something which is good for all time. The work need never be repeated if it is obtained accurately in the first place and can be used over and over again, in making calculations as regards

BEFORE the well known principles of thermodynamics can be applied to the solution of problems in refining technology it is necessary to determine a number of thermodynamic properties of the various hydrocarbons composing petroleum, such as heats of fusion, vaporization, combustion and reaction specific heats and free energy changes, and other data.

Commander Davison outlines the accomplishments of this science in other industries as well as in oil refining, and indicates some of the results that may be expected when the research chemist and engineer have available the information that is necessary for the utilization of the science on a broader scope.

[1]Lewis' "A System of Physical Chemistry," vol. II, page 1, et seq; Longmans Green & Co., London.

[2]"Application of Thermodynamics to Chemical Reactions of Petroleum Products," Bulletin American Petroleum Institute, Jan. 2, 1930, page 93.

processes and treatments of the various substances. At this time we have very little data along these lines. It is that practical work which Dr. Francis and others who are interested, would like to see done.

"Now after having once determined these constants, let us say not necessarily for every variety of hydrocarbon we have at a refinery, but for a number of them, in the different hydrocarbon families such as paraffins, naphthenes, olefins, and many others. We could interpolate with great accuracy intervening substances, so the total amount of work involved is not so great after all, when we consider the enormous field that can be covered and the actual practical results which may be anticipated, provided the work is done right in the first place and proper application is made later. In some instances in the past, thermodynamics have received a black eye due to the fact that some of its advocates became over-enthusiastic and substituted guess work and theories of their own for actual physical and chemical facts. Of course, when this was done some of them went wrong.

"In other lines of industry, thermodynamics is being applied right along with splendid results. Immense sums of money which would otherwise have been wasted or fruitless experiments have been saved, because thermodynamics has been able to state definitely when certain reactions or processes are impossible or impracticable. But it can do more than this, as it will also tell us when certain reactions and processes are possible.

"While the science is not new, it is still after all, incomplete. The foundation is on solid ground and will last forever, but the complete edifice has not yet been built. At the present time thermodynamics does not deal with the time element. While it will truthfully tell whether or not a certain reaction at a certain temperature is possible, it is silent on the question of time required. It gives us an answer in the form of what is called free energy. It tells us whether a certain product will be stable or unstable at certain temperatures. It tells us whether or not certain products can be formed, but does not tell us how long it will take to form them.

"Possibly some day, some great mind will make another generalization and have his name added to those of the immortals who have gone before. But whether or not these future generalizations or discoveries are ever made, we already have enough solid foundation on which to build, and to create in the petroleum industry an exact science which will result in better methods, better products and unquestionably new and more valuable products.

"When one sits in and listens to some of the technical meetings and discussions pertaining to cracking or when he goes around in the industry discussing this matter with different individuals, he is impressed with the great variety of views and beliefs that are held. One cannot but help be also impressed with the great range of pressures and temperatures which are used in the cracking processes, which are covered by some six thousand or more patents. And when one hears some of these spirited discussions as to what is true and what

Commander G. C. Davison president of the Tri State Refining Co. and head of the National Petrolleum Association department of scientific research

is not true, one can only draw the conclusion that the subject is not thoroughly understood fundamentally. It it were, and the fundamental principles and facts thoroughly understood, we would have no room for these discussions.

"The same thing is true for other phases of refining. The possibilities of the future are over-whelming. Refining today is carried on in an empirical manner, and new facts are being discovered almost daily. There are possibilities of synthetic processes as well as processes of dissociation, or of cracking. One process may be called constructive and the other destructive. In fact, the two processes sometimes go along simultaneously. While certain molecules are being destroyed other molecules are being constructed, both of a higher and lower order than those started out with. If the practical application of thermodynamics were worked out in accordance with our present known fundamental laws, it is more than likely that millions and millions of dollars could be saved to the industry.

"It is practically certain, for example, that certain vapor phase cracking processes which now form an undue proportion of fixed gases which are a waste and have to be burned as fuel could be greatly improved so that the yield of fixed gases would be cut down and the yield of motor fuel could be greatly increased. In fact, one cracking process claims to have done just this. The fundamental laws of thermodynamics check and point to this being possible. In the same way, control of other products can doubtless be obtained if we had, to begin with, the necessary information as regards physical constants.

"The question of the use of higher pressures to obtain certain products, as for example, in the hydrogenization process, can all be answered definitely by thermodynamics. For example, let us say we have a reaction which thermodynamics show to be impossible at ordinary pressures. Thermodynamics will give the answer as to whether this same process would be feasible under some abnormally high pressure, say 100 or 1000 atmospheres.

"In a recent issue of the NATIONAL PETROLEUM NEWS, Colonel Burrell wrote an article on this subject. This article dealt more with generalities and with the work of Dr. Francis. Dr. Francis apparently is not a refinery man and the charts he published and the work he did were evidently based on pure science, with very little exact data to begin with. Nevertheless, Dr. Francis made certain predictions and statements and Colonel Burrell in his article compares them with actual practice and shows that they were in the main correct.

"There is no chemical industry which is so complex, which involves so many different chemical reactions, and which deals with so many complex mixtures as the petroleum industry. Yet there is little doubt that all of these apparent complexities are governed by simple natural laws and that most of these laws are already known in the science of thermodynamics. Therefore, it is hard to think of any more intriguing or interesting problem than to take this very complex material with which we deal, split off some of its components, find out just what their physical characteristics are and then finally to develop processes which apply known laws and which will make these complex mixtures straighten themselves out and form themselves into the substances we want.

Work along this line is going on rapidly. Our petroleum hydrocarbons contain the basis of very many valuable chemicals. The addition of one oxygen atom to paraffin hydrocarbons gives us a whole range of alcohols. One of our great chemical companies is now making from fixed gases derived from a Gyro cracking plant, large quantities of pure drinkable alcohol, C_2H_5OH.

"When one thinks of the immense

commercial possibilities of using petroleum hydrocarbons as a base, and by adding an atom of this or an atom of that and making an immense number of commercial chemicals which are in daily use and which sell at anywhere from 50 cents to several dollars per gallon, one must tremble for some of the other industries. One recent development is in connection with adding two atoms of oxygen to hydrocarbons. When this is done, we can get a series of fatty acids. A process has recently been worked out and turned over to one of our largest soap manufacturers who has perfected it to a point where the fatty acid he produces is perfect in every respect except in regard to odor.

"If we read Chemical Abstracts and other information, especially patents, it is apparent that thousands of minds are working along these lines, most of them in the dark and by empirical methods, but progress is being made. Present progress might be compared to that of a navigator exploring an unknown archipelago without a chart. By sailing around, he is almost bound to make some discoveries. Some day, enough of these discoveries will be made, and put together, and when correlated by the science of thermodynamics, we will have a complete chart and it will then be clear sailing.

"Your department of scientific research hopes that it can do its bit by encouraging and helping these scientists who are willing and anxious to measure, or ascertain the necessary physical data, and then to put it together in such a way as to be of practical use to the industry. The great beauty of this work is that it is all fundamental, exact, and when once done will be good for all time and of permanent benefit, not only to our industry, but to the whole civilized world."

Factors Governing the Crystallization Of Wax in Paraffin Distillate

By Harold J. Dunmire*

(*Presented before National Petroleum Association, Cleveland, April 23-24*)

THE purpose of this paper is to point out some of the factors governing the crystallization of paraffin wax. The work outlined here was carried out in laboratory size apparatus where conditions governing the various experiments could be easily controlled. No attempt is made to enumerate the different theories advanced on the subject by men who have done various amounts of research in the petroleum industry, nor is any attempt being made to discredit any of those theories. Instead I am merely outlining the work done, together with results obtained, and the observations made while obtaining those results.

For many years it was thought that "cracking" was essential to the manufacture of wax distillate. Refiners took their wax distillate cut from the crude, and reran this cut in a so-called cracking still, to obtain the desired crystalline form of wax necessary in a pressable paraffin distillate. Later, the primary cut from the crude was segregated so that only part had to be cracked in order to make the distillate pressable.

More recently refiners who can distill their paraffin distillate cut through a bubble tower have obtained pressable distillate on the primary distillation. It was decided to prove, if possible, just what effect cracking had, and what effect fractionation had, upon the manufacture of good wax distillate.

A Spencer microscope, equipped with Bausch and Lomb camera, was used in this work for obtaining photomicrographs of the wax crystals. Polarized light was obtained by means of crossed Nicol prisms. This apparatus had been in daily use for some time in conjunction with regular plant operation; therefore the experience already obtained in judging the photomicrographs insures a fairly correct analysis.

A quantity of paraffin distillate was prepared by taking a deep cut from West Virginia Pennsylvania grade crude, under vacuum, in a pipe still. This method was used to eliminate cracking as much as possible. The cut obtained will be referred to hereafter as uncracked paraffin distillate stock.

To determine the effect of fractionation a portion of the above prepared stock was distilled under vacuum (10 m.m. of mercury pressure) and 5 per cent cuts collected. The apparatus used consisted of a regular Engler distillation flask, well insulated, with the heat applied in such a manner that there was only a small temperature drop between the liquid in the flask and the vapors entering the condenser.

The distillation was carried out rapidly so that poor fractionation of the overhead distillate resulted. The 5 per cent cuts were prepared for photomicrographing in such a manner that the first sample was composed of the first 5 per cent; the second sample was a blend of the first and second; and the third sample was a blend of the first, second and third cuts; or in other words the third sample represented the first 15 per cent over. In like manner blends were made up from all of the 5 per cent cuts so that photomicrographs of each blend could be taken to determine the maximum percentage of good pressable distillate obtainable with poor fractionation.

A second portion of the uncracked paraffin distillate stock was rerun, under 10 millimeters mercury pressure, through a high packed tower carefully controlled in order to secure good fractionation of the overhead. The cuts were collected in 5 per cent lots, as before, and prepared for photomicrographing by blending. It was found that almost 20 per cent more of good quality paraffin distillate was obtained in the case where the overhead had been subjected to good fractionation. This seems to be an important factor in the preparation of good pressable distillate.

The effect of cracking was studied by preparing the sample in the following manner:

An autoclave capable of withstanding several hundred pounds pressure was used for cracking the paraffin distillate stock. The operation of this autoclave consisted in charging the required amount of paraffin distillate stock and holding the temperature desired for a predetermined length of time. Both the time and temperature were varied so that a check of these two factors might be obtained. Any overhead resulting, which could be condensed, was mixed with the bottoms after these bottoms had been withdrawn and cooled. The amount of this overhead, in all cases, was small. In this way the amount of

*Valvoline Oil Co.

cracking could be varied with a minimum of distillation.

The different samples obtained above were rerun under 10 millimeters of mercury pressure, both with and without fractionation, as previously explained. As in the case of the uncracked paraffin distillate stocks, samples were taken in 5 per cent cuts and blended for photomicrographic analysis. The results indicated that time was more important than temperature after cracking temperatures had been reached. The cracked samples showed increases in the percentage of pressable distillate over that obtained from uncracked stock both in the case of those distilled with and without fractionation, *but the percentage was lower in the case of all cracked samples when rerun without fractionation than that obtained when rerunning the raw distillate with good fractionation.*

This would tend to prove that fractionation is more important than cracking when running paraffin distillate. It would also tend to show that fractionation eliminates a high boiling substance which inhibits crystallization and that cracking either destroys or breaks up this high boiling material.

The maximum amount of pressable paraffin distillate can be obtained with

1. Cracking and good fractionation.
2. Good fractionation.
3. Cracking and poor fractionation.
4. Poor fractionation.

The yield in per cent did not show as great a difference between 1 and 2 as between 2 and 3, indicating that, while cracking was desirable, it was not as beneficial as good fractionation. The combination of both yields the maximum desirability.

Paraffin distillate samples obtained from several different crudes were photographed under the microscope so that a comparison of their crystal size and shapes could be made. The sizes varied, at the point of crystallization, from .0005 inch to .01 inch long, depending upon the crude and the manner in which the distillate was made. The shape of the crystals varied from long thin needles to flaky crystals of very large sizes. The shapes depended to a large extent upon the nature of the crude. Generally speaking, though, the wax in all crudes appeared to be essentially the same.

While working on the above problem, observations were made which might be summed up as follows:

1. That fractionation is more important than cracking in the manufacture of good wax distillate.
2. That all petroleum wax is of the same type of material. So-called amorphous wax, as a distinct type does not exist.
3. Petroleum wax is naturally very crystalline, and if its tendency to crystallize is not suppressed, the formation of good crystals will result.
4. The presence of a colloid, or high boiling material, inhibits the formation of good crystals, causing the so-called amorphous condition to result.
5. This high boiling colloid can be separated from the waxes by high vacuum distillation, without decomposition, provided the colloid is not carried over by entrainment.

The exact nature of the interfering colloid is problematical, but there is evidently more than one type; and at least one effective type is colorless and lacking in absorptive properties. Should it be possible to remove the crystal inhibitors, either by absorption or by chemical treatment, the wax could be removed by the regular pressing operation. This would eliminate the necessity of cold settling plants and expensive centrifuging installations. Ordinary filtration through Fullers Earth will tend to remove some of the interfering colloid.

In conclusion it might be well to restate what has been explained above, that good quality pressable paraffin distillate can be prepared from the crude without decomposition provided the paraffin distillate cut has been fractionated sufficiently to eliminate possibility of an excessive amount of the high boiling crystal inhibitors being carried over by entrainment.

The Practical Side of Shipping Natural Gasoline

(Presented by Otto Peters, of Brooks & Hanlon, Inc., at the Plant Operators Meeting of the Natural Gasoline Association, at Breckenridge, Texas, April 22)

THE fundamental property of natural gasoline is its volatility. This presents the great problem of evaporation and the loading losses while handling at the plant, and the outage losses in shipping. In the summer months loading losses may be from 10 to 15 per cent as against one to two per cent in the winter months.

It is general practice to trap off the vapors from the tank car while loading in order to handle them with the so called vapor units of the plant. These vapor compressor units operate at a discharge of 60 to 80 pounds gauge pressure, and where the tank car vapors are rich in gasoline content, we find in practice that the gross production of the vapor units increases about three gallons per minute per tank car while loading is going on. This increase amounts to 540 gallons to the car that takes three hours to load.

It is essential that the men who have charge of the loading possess qualifications that enable them to visualize the responsibility of their work. Their skill and their initiative enable them to save great losses, and an appreciation of their responsibility enables them to cooperate closely with the plant operator by seeing to it that the vapor units are ready to handle the tank car vapors. To conduct the loading rack work calls for knowledge and loyalty in the conservation of company interests as the slightest neglect or error brings about a loss in some form that cannot be regained.

I submit a comparison of distillation on natural gasoline and a motor fuel that has been blended with natural gasoline. One is from the laboratory of a gasoline plant and the other is copied from a refinery record and it happens that the factors of difference in the distillation methods are strikingly illustrated in Table 1.

In the two distillations you will note the difference in temperature for the same per cent recovery. This difference shows the lighter hydrocarbons in the natural gasoline and for this reason it is absolutely essential that the method of distillation test be strictly adhered to. These lighter hydrocarbons cause all the losses involved and an error in distillation from any cause aggravates the matter. Furthermore, in shipping to a higher altitude, the recovery of the natural

Table 2—Boiling Point of Lighter Hydrocarbons at Various Altitudes

Fahrenheit	At Sea Level	1000 Feet	2000 Feet	3000 Feet	4000 Feet
B. P. Propane	Minus 45.5	—47	—49	—51	—52.5
B. P. Normal Butane	Plus 32	30	28	26	24
B. P. Iso-Butane	Plus 8	6	4	2	Zero

Table 1—Comparison of Natural Gasoline With Blended Motor Fuel

	Grade BB Natural Gasoline	Blended Motor Fuel
Gravity	87.6@60	60@60
Temperature of Condenser	32	34
Temperature of Room	71	76
C. C. Tested	100@32	100@64
I. B. P.	57	98
I. B. P. time obtained	3′	7′ 3″
Maximum Temp	341	396
Residue	0.6	0.9
Loss	14.1	2.0
Color	25-Plus	25-Plus
Doctor	Negative	Negative
Bath	33	58 to 61
Barometer	28.23″	28.23″
Standard Vapor Tension @ 70° F.	7 lbs.	1.7 lbs.
Standard Vapor Tension @ 100° F.	14.5 lbs.	5.6 lbs.
Reid Vapor Pressure @ 100° F.	29.0 lbs.	6.0 lbs.

The curve on these distillations is as follows:

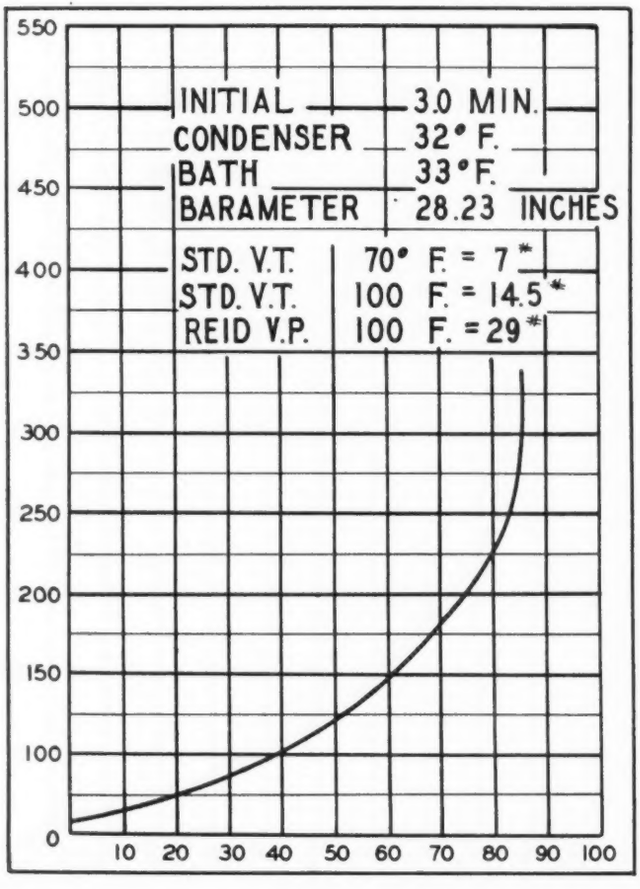
NATURAL GASOLINE % Over	Temperature	BLENDED MOTOR FUEL % Over	Temperature
5	63	5	127
10	68	10	148
20	76	20	182
30	87	30	213
40	101	40	238
50	123	50	262
50	148	60	284
70	184	70	308
80	230	80	332
85.3	341	90	360
		97.3	396

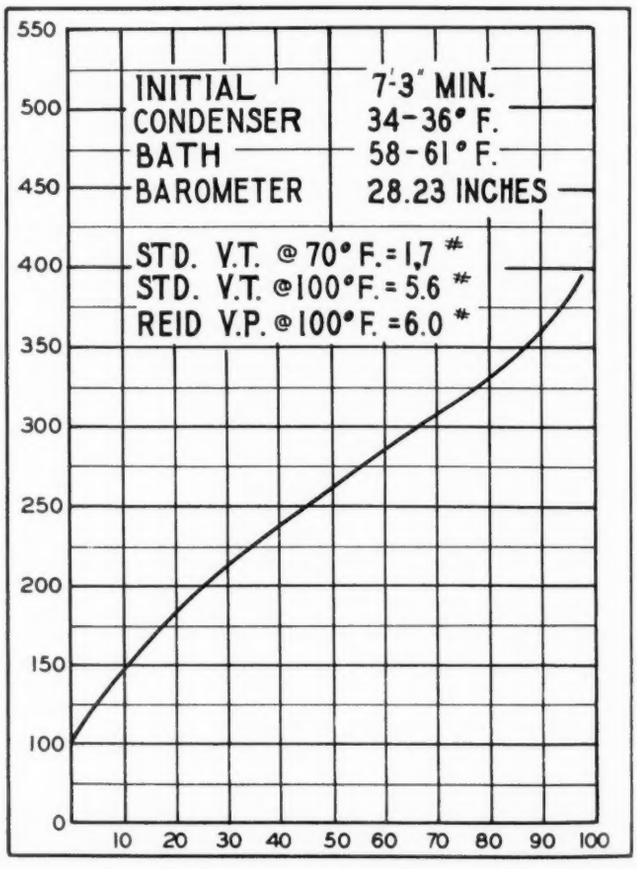
gasoline is effected due to the presence of the lighter carbons which adds to the problems of the natural gasoline manufacturer and the accompanying table shows the boiling points of these lighter hydrocarbons, using as a base one-tenth inch of mercury per 90 feet increase in elevation above sea level.

By referring to Table 2 you will note that the boiling point of normal butane is lowered from 32 degrees F. at sea level to 24 degrees F. at 4000 feet elevation but information at hand shows that this difference will only lower the distillation recovery about three per cent on a product containing approximately 35 per cent normal butane, but there will be a decided difference in the recovery due to the presence of varying amounts of iso-butane. It can be safely assumed that three per cent iso-butane will lower the distillation recovery five per cent exclusive of the effect of altitude on the normal butane content.

Assuming that the natural gasoline has been manufactured and loaded in accordance with specifications, we are still confronted with losses apparently beyond our control. After all precautions have been taken to guard against the evaporation and the loading and the outage losses, we are still subject to losses occasioned by the method of handling and the method of distillation at the unloading end. To unload the tank car of natural gasoline without making any effort to prevent or save the escaping vapors will cause an irreparable loss expressed in so many gallons of gasoline, and this loss should not be ignored as some one has to pay for it, keeping in mind that it has already added to the freight charges, and in this connection I want to remind you that the freight charge for gasoline is based upon the hundred pounds.

In questioning the method of distillation I do so with the utmost respect as the point I wish to bring out is for the benefit of all concerned, and that point lays in the detail of gaso-





Distillation curve on a blended finished motor fuel is shown at the right. By comparison with the curve on natural gasoline, the factors of difference in the distillation methods are strikingly illustrated

line distillation as shown by the difference in authorized specifications, namely, one applying to refinery products and one applying in particular to gasoline plant products. It follows that, where the refinery laboratory is exercising careful forethought in the analysis of its products, it may not realize nor appreciate the extreme care needed in making an analysis of a volatile product such as natural gasoline.

We must keep in mind that the shipping of natural gasoline is not a matter of simply loading a tank car. To conserve and protect such a volatile product requires careful handling, not only in the loading but also in the unloading of it, and the standard of work at present calls for knowledge enabling one to anticipate all the factors involved. I look forward for the time to come when, through the desire to render service and also for economic reasons, the seller and the buyer of natural gasoline will unite for mutual benefit to prevent the great loss now taking place which affects one by paying for the loss and the other by losing its use.

Gas Meters and Their Operation

(Presented by E. E. Stovall, Lone Star Gas Co., Dallas, Texas, before Plant Operators Meeting of the Natural Gasoline Association, at Breckenridge, Texas, April 22)

THERE are two methods of measuring gas used, or commonly known throughout this particular section of the country. They are the positive or displacement meter and the orifice meter measurement.

The positive meter measurement is perhaps not so well known to gasoline plant operators, or at least is not used as much as the orifice meter measurement in gasoline plant work, as most of the measurement is in large volumes and under low pressure, which would either necessitate a battery of positive meters or the orifice meter.

The positive or displacement meter merely displaces a certain amount of gas which is registered on a direct reading dial through mechanical developments. As the gas enters the meter it creates a rotation of the meter and through a flexible diaphragm mechanism a certain amount of gas is displaced as the diaphragm move in and out in the manner of a bellows. Each time that these diaphragms move in and out a given amount of gas has been passed into the meter and, as stated above, is registered through a mechanical connection to a dial.

In measuring gas under high pressure with a positive meter it is necessary to have a recording pressure gauge attached to the meter in order to obtain the average pressure. This gauge is usually known as a pressure, volume and time gauge. By having this type of gauge you are able to obtain the average pressure and the average rate of flow at all times. Of course it is perhaps possible to use positive meters under vacuum conditions but it would necessitate a special gauge to record the vacuum on the line, and this would decrease the capacity of the meter to such an extent that it would be impractical for this use.

The positive meter is generally used for domestic consumption, small industrial consumption and in gasoline or compressor plant work it is used for measuring fuel gas. The Emco meter manufactured by the Pittsburgh Equitable Meter Co., of Pittsburgh, and the Metric meter manufactured by the Metric Metal Works of Erie, Pa., especially in the larger sizes, are perhaps the most popular positive meters used in this section of the country.

In computing the amount of gas passing through a positive meter you merely take the reading of the meter at whatever period you desire it to cover. If the pressure on the meter is the same as the contract pressure base the amount passed for a given period of time is the direct reading of the dial. If the meter is operating under a higher pressure than that of the contract pressure base, then it is necessary to correct from the average pressure as shown by the recording gauge to the contract pressure base. This is done by applying this

formula $\frac{\text{14.4 plus gauge pressure}}{\text{14.4 plus contract pressure base}}$ to the

difference in the meter reading on the dial registration for the period that is desired.

The orifice meter is simply a velocity type meter. It does not measure the quantity or does not displace any certain amount of gas but simply indicates the velocity or rate of speed at which the gas is passing a certain point, and also it indicates or records the pressure which is known as the static pressure at this point. The expression of a Westcott orifice meter or a Foxboro orifice meter is usually pictured in a person's mind just what you see by looking at the recording gauge. However, the recording gauge is only a part of the meter installation as it is necessary first to have a lime with companion flanges and an orifice plate inserted between two flanges. Then by connecting the recording gauge to the line so that the pressures on the up and down stream sides of the plate are placed on the meter properly you have an orifice meter installation.

The recording gauge is constructed with a U tube containing mercury and a float and the motion of this float is mechanically transmitted to a revolving chart, which indicates the drop in pressure across the orifice plate, recording it in inches of water pressure. It also has a helical tube element in combination, which records the static or line pressure at the point of the meter installation. If the meter setting is a flange connection the static pressure is taken from the down stream side of the plate. If the meter setting is a line connection the static pressure is taken from the up stream side of the plate. The chief reason for this is that the tests conducted in determining the coefficient for different size plates were run in this manner.

The orifice meters most commonly known are of the Westcott and the Foxboro makes. The principle of the two is the same. Both are the mercury float types. Both manufacturers furnish meters with varying differential and static pressure ranges. The differential ranges are 2½ inches, 10 inches, 20 inches, 50 inches and 100 inches water pressure. The static element of course is interchangeable and can be had in ranges from 0-30 inches mercury vacuum and from 0-2000 pounds pressure. In measuring casing head gas under a vacuum the 10-inch or 20-inch range meters are usually used in order to obtain a very accurate reading with the least loss of pressure due to friction. In some refineries where the pressure is very low a 0-2½ inches of water differential is used. This meter is constructed with a large float and fuel oil instead of mercury is used as the liquid medium.

At city border stations where the flow varies considerably a combined or duplex installation consisting of a 100-inch meter and a 20-inch meter is installed in order to increase the capacity of the station and still get a very accurate measurement by reading the low differentials on the 20-inch meter. In reading a 20-inch range chart it is possible to read the differential to the nearest one-tenth inch, whereas on the 100-inch

(Continued on Page 48)

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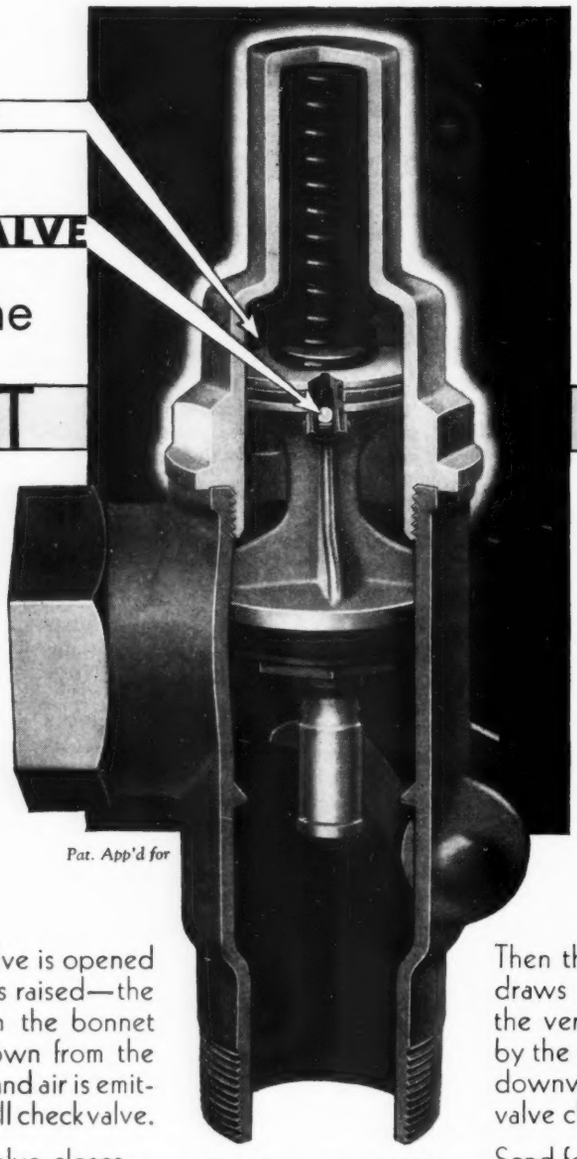

Pat. App'd for

As the loading valve is opened —as the plunger is raised—the compressed air in the bonnet forces the ball down from the small escape vent, and air is emitted through the ball check valve.

As the loading valve closes—as the plunger goes down—suction in the bonnet is relieved through the by-pass, until the loading valve is almost closed.

Above is shown a cut-out view of the Wheaton Type 25, designed for the effluent end of the line. Type 26, for mid-line location, is also made with this improved bonnet.

Then the suction in the bonnet draws the ball up and closes the vent. The vacuum created by the plunger in completing its downward stroke prevents the valve closing with a bang or jar.

Send for samples. Test them for 60 days. If you are not convinced that they are the softest self-closing valves ever made, return them for full credit or refund.

A. W. WHEATON BRASS WORKS, NEWARK, NEW JERSEY

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Company Organized by S.O. New Jersey To License Hydrogenation Process

NEW YORK, April 16

REFINING companies in this country which take part in the development in the early commercial stages of the new hydrogenation process for making gasoline and other petroleum products will become stockholders in the company licensing the process.

In brief, the hydrogenation process, as it will be applied in this country, consists in adding hydrogen to heavy crude oil or heavy residue stocks to produce relatively far greater amounts of gasoline than can be secured now through cracking.

The Standard Oil Co. (New Jersey), owner of patent rights in this country to the process which was originally developed in Germany to produce motor fuel from coal, announced it has organized the Hydro Patents Co. and turned over to that company the exclusive rights to license the hydrogenation process in and for the United States.

The Hydro Patents Co., in turn, proposes soon to put into effect a licensing plan by which companies licensed to use the process will be required to take stock in the Hydro company in proportion to their volume of daily hydrogenation in barrels.

At present all the issued stock of the Hydro Patents Co. is held by the Standard Development Co., another Standard of New Jersey subsidiary; but within a short time, it is announced, an invitation to subscribe to the stock of the Hydro company will be offered to those refining companies which are thought to be in a position to take advantage of the hydrogenation process because of their refining capacity. Such companies will be stockholder-licensees.

Hydrogenation Licenses Also Open to Non-Stockholders

The New Jersey Standard also announced that, in the future, licenses to employ the hydrogenation process will be available to other companies independent of the provision that they also own stock in the new Hydro company.

Licensees will also be required to enter into an agreement with the Hydro Engineering and Chemical Co., another new subsidiary of the New Jersey Standard. Upon request this company will make available to licensees of the Hydro Patents Co. the technical knowledge of Standard Oil Co. (N. J.) and I. G. Farbenindustrie Aktiengesellschaft relating to the hydrogenation process. This company will manufacture and maintain stocks of catalysts, and, on request, will supply them to licensees of Hydro Patents.

The licensees of Hydro Patents will also submit to the Hydro Engineering and Chemical Co. all plans, lists and specifications for the construction, enlargement or alteration of equipment for carrying on the hydrogenation process and this company will also act as designing and construction engineer for licensees and make complete plans, estimates, specifications and lists and supervise all construction work.

History of Development of Hydrogenation Process

The statement from the Standard of New Jersey contained the following description of the process and history of its development:

"In 1926 representatives of the Standard Oil Co. (N. J.) had an opportunity to become acquainted with the work on the liquefaction of coal by hydrogenation then being developed in Germany by the I. G. Farbenindustrie Aktiengesellschaft. That work had resulted in the erection and operation of a coal hydrogenation plant near Merseburg, Germany, where production is on a commercial basis. In 1928 more than 300,000 barrels of gasoline were produced by this plan from coal and coal tar and this volume has since reached higher figures. The gasoline thus produced from Germany's brown coal is similar in every respect to petroleum gasoline as we know it in the United States. Germany has an abundance of fairly cheap brown coal which is near the surface and can be mined easily with mechanical equipment.

"During the past few years the quality of crude oil available to the petroleum industry has changed materially, many of the crudes today being primarily fuel crudes or crudes containing a high asphalt and sulphur content, with a smaller fraction of natural white products. As a consequence, in producing the needed supplies of gasoline, kerosene and similar highly refined oils, it has been necessary to refine an amount of crude oil in excess of the economic market demands for heavy fuel.

"It was natural, therefore, that the knowledge and technique developed in the liquefaction of coal should be employed in the solution of the problem of refining the crude oils available to the industry so as not to produce heavy fuel oils in excess of economic requirements.

"In 1927 the foundations of a new refining practice, which gives promise of revolutionizing the oil industry in the future, were laid at Baton Rouge. For two years intensive laboratory work on the hydrogenation process was carried on at the research laboratories of the Standard Oil Co. of Louisiana, supplemented in 1928 by the erection of a small plant for experimentation with the process on a commercial scale at that company's Baton Rouge refinery.

"Finally, in the fall of 1929, at Bayway, N. J., work was begun on the first large scale hydrogenation plant designed to operate on petroleum. This plant, which is now completed, will have a nominal charging capacity of 5000 barrels per day and is expected to begin operations in the early summer of the current year. One other hydrogenation plant of the same capacity is now being erected at Baton Rouge, and a similar plant of like capacity is under design for the Humble Oil Refining Co. at Baytown, Texas.

Simple Description of Process Employed

"Stripped of all technical language, the main process of hydrogenation consists in adding hydrogen to the heavy crude oils or the residues from lighter crudes after the gasoline and other necessary light products have been removed.

"Petroleum is a mixture of many hydrocarbons and those boiling at relatively low temperatures can be distilled from it without decomposition. The hydrocarbons which vaporize only at high temperatures are broken down, or "cracked," during the process of distillation and lower boiling products are formed. These cracked higher boiling products contain less hydrogen in proportion to carbon than those which can be obtained by simple distillation at relatively low temperatures. This deficiency in hydrogen is supplied by the hydrogenation process.

"Up to the present there have been but two generally accepted methods for obtaining light distillates from petroleum: distilling off the low boiling hydrocarbons and cracking the heavier ones. This has now been

supplemented by a third basic process, hydrogenation. The potential field of this development, so far at it has yet been explored, may be summed up as follows:

(1) The conversion of coal and other carbonaceous solids into oil.

(2) The conversion of heavy oil, natural or synthetic, into light products.

(3) The conversion of crude oil, intermediate products or finished products into similar products of modified chemical characteristics.

"Since the advent of the internal combustion engine and the use of automobiles the oil industry has been faced with the problem of supplying a demand for gasoline which far exceeded the demand for other petroleum products. Consequently, for many years the industry has concentrated all its efforts on increasing the yield of gasoline from crude oil.

"With ordinary refining methods and the cracking processes the best result the refiner has been able to obtain up to the present is approximately half of a barrel of gasoline from a barrel of crude oil. From average quality crude he gets approximately 40 per cent gasoline, 20 per cent kerosene, lubricants and other products, and 40 per cent heavy fuel oil. Some market must be found for this fuel. This has been the industry's greatest problem and the disposal of heavy fuel oil, produced in excess of the economic demand, therefore, has served to demoralize the fuel market. In fact, by reason of this excess production, the price of fuel oil has so declined that it has eliminated coal as a fuel in many markets near refining centers.

"The hydrogenation process, with its potential ability to convert the whole of a barrel of crude oil into gasoline whenever necessary, provides a definite solution of this basic problem of the industry.

"It has never been the plan to restrict the use of the hydrogenation process to the subsidiary and affiliated units of the Standard Oil Company (N. J.). It has always been the view of I. G. Farbenindustrie Aktiengesellschaft and Standard Oil Company (N. J.) that this process would have the best chance of exerting a maximum constructive influence on the oil industry if it were offered for license in the United States at the earliest practicable time and on a basis which would provide opportunity for cooperation by the industry at large in its further development.

"Naturally, many problems in connection with the most effective application of this process to the problems of the industry still remain. The three plants at Bayway, Baton Rouge, and Baytown, however, will afford an opportunity to study hydrogenation on a full commercial scale and to determine the most efficient and economical method of fitting this new principle into its proper place in the modern oil refinery."

Fresh Activity Assures New Mexico Producing Importance in 1930

By Paul Wagner
N. P. N. STAFF WRITER

FORT WORTH, April 18

NEW MEXICO'S importance as an oil producing state, already in the ascendancy, promises to reach new heights in 1930. The Hobbs field, in eastern Lea county, will prove the greatest new development area of the Permian salt basin producing province this year, except possibly the Judkins district of Ector county, West Texas, where 30-odd rigs are running.

Opening of the Hobbs field to exploitation, two years after the drilling of the discovery well by the Midwest Refining Co., in 9-19S-38E, will become a reality at once.

A short line railroad built from Monahans, Texas, to Hobbs, N. M., hereafter will permit tank car shipments of crude and transportation facilities are being extended to the area by the Atlantic Pipe Line Co., and the Humble Pipe Line Co. Shell Pipe Line Corp. is credited with extension also of its West Texas system to Hobbs, although confirmation of plans is lacking.

Observers skilled in analyzing developments forecast by field conditions, plus company policies, economic factors and drilling requirements, foresee for Lea county a daily production level of 75,000 barrels by Sept. 1, 1930. They consider production of 100,000 barrels daily probable for Jan. 1, 1931, but are less certain of the level to be attained in the first half of the present year.

Hobbs field, as the richest known spot in the partly developed Lea county district, is depended upon to provide the bulk of new yields. Already it has potential production exceeding 15,000 barrels daily, including the Humble Oil & Refining Co.'s northwest extension on the Bowers permit in 30-18S-38E, which tested 9640 barrels in 24 hours before being shut in.

The Midwest discovery, two and a half miles southeast of the Humble's "gusher," was previously the largest well in the field, testing maximum flow of 840 barrels daily in July, 1928.

Four other producing wells of the district are the Midwest's No. 1 Capps, diagonal offset to the discovery, in 3-19S-38E; its No. 1 Leach, in the northwest quarter of 15-19S-38E; the Walker-Terry Oil Corp.'s well in the south half of the southeast quarter of Sec. 10 and the Ohio Oil Co.'s No. 1 state land, in the south half of the southwest quarter of Sec. 9.

Performance of the Humble well has indicated the area extending northwesterly from the discovery gives promise of best production at Hobbs, stimulating new locations announced in the last two weeks by the Midwest, Shell, Landreth, Prairie, Gypsy, Amerada, Ohio and Texas Pacific companies, totaling more than a dozen. New locations, plus operations already under way at Hobbs, bring the field total above 20.

Fresh work in the Lea area, 12 to 15 miles southwest of Hobbs, where The Texas Co. and the Cranfill-Reynolds interests are active, make this general part of Lea county assume greater development importance than the older territory in the vicinity of Jal, where nominal oil and heavy gas production was found on the subsurface lime ridge extending northerly from Winkler county, Texas, into New Mexico.

Pipe line facilities of The Texas and Humble companies have existed as far north as Jal since last year, but present construction is the first to be carried on toward the Hobbs area. The 10-inch line to be constructed by the Atlantic will extend northwesterly from Midland, through Andrews county, Texas, tapping the one-well field discovered by the Deep Rock Oil Co., in partnership with the Atlantic and the California Co., in Sec. 6, block A-46. The Shell line probably will be extended north from

existing facilities in Winkler county, Texas.

Approximately 11,000 barrels daily of crude oil is being produced in the Jal, Lynch-Lea and Hobbs areas of Lea county, which extend a distance of approximately 40 miles north from the Texas-New Mexico boundary and are scattered along a northwest-southeast lime ridge trend except for the Hobbs development.

Geologically and otherwise, the Hobbs area differs materially from the other divisions of the district mentioned, although it is undoubtedly related to them structurally. The brown, sugar sand pay found in the Hobbs wells at 4100-4200 feet, and yielding crude testing 37 degrees, A.P.I. gravity, compares more favorably with oil from the limey sand horizon of the Big Lake field, in Reagan county, Texas, than other producing areas of the Permian salt basin region.

Because of the characteristics noted, the Hobbs crude may be expected to be in greatest demand of any currently produced oil in the salt basin region; besides which the field gives greatest promise for satisfactory future recoveries because of conditions in the pay horizon.

Unlike the Big Lake field, which was developed by two operating interests, the Big Lake Oil Co., and the Texon—Group One (Now Continental) companies, the Hobbs district will be competitively drilled.

Many 80-acre tracts lie between the Midwest discovery of the Hobbs area and the Humble's Bowers extension, with others adjacent thereto along the inferred northwest-southeast strike of the structure.

The area is too cut-up to permit of pooling arrangements for development, although New Mexico laws permit cooperative arrangements that may be invoked to bring about partial curtailment of operations in the interest of conservation.

A monkey-wrench was thrown into the Lea county curtailment program earlier in the present year, however, when Dr. Austin Crile, New Mexico land commissioner, told operators assembled for a curtailment meeting that so long as the state's consumption of petroleum products exceeded equivalent production of crude oil there would be insistence on a measure of development on state lands. A stand was taken also for the help of state schools and other institutions, sorely in need of finances, which would benefit from development.

The writer found on a trip to the Permian salt basin region, from which he has just returned, that the opening up of the Hobbs area for active work, hinges on three things:

(1)—The attitude of the state of New Mexico, plus the reaching of the time when many state and federal tracts require drilling to fulfill requirements.

(2)—The completion of the Monahans-to-Lovington short line railroad as far north as Hobbs, thereby permitting tank car shipments of crude such as the Walker-Terry Oil Corp. will make from its Hobbs field well to the Burford Oil Co., at Pecos City, Texas.

(3)—Pipe line construction under way, which will be ready for regular runs before the next crop of wells in the area is completed.

Atlantic Pipe Line Co., which has 40,000 barrels daily capacity from Midland to the Gulf Coast at Atreco, in the Beaumont district, has been running approximately 27,000 barrels of crude daily since the dropping-off of Winkler county, Texas, production. Included in the Atlantic's shipments are approximately 10,000 barrels daily of contract oil purchased last fall from the Gulf Production Co. Atlantic's own production in Winkler county amounts now to only about 6000 barrels daily and it is in need of tapping a fresh source of supply.

Shell Petroleum Corp., with two West Texas pipe line outlets totaling 80,000 barrels capacity daily to Woodriver and Houston, is running less than 62,000 barrels daily from all salt basin fields. Humble Pipe Line Co., with two systems totaling 110,000 barrels daily capacity, is operating them at approximately 76,000 barrels daily.

The Texas Pipeline Co., with 50,000 barrels daily outlet from West Texas and New Mexico is handling less than 25,000 barrels daily through its system; and the Gulf Pipe Line Co., with 50,000 barrels, salt basin outlet is operating below 39,000 barrels daily runs.

Magnolia Petroleum Co.'s pipe line department is handling less than 20,000 barrels daily, compared with 32,000 barrels capacity and Pasotex Pipe Line Co.'s runs of approximately 9000 barrels daily amount to only half its capacity. Quantities of crude handled by Illinois Pipe Line Co., from Yates field south, vary from 35,000 to 40,000 barrels daily, notwithstanding capacity of 50,000 barrels.

In the case of the Magnolia, Gulf, Humble and Illinois companies all control potential production in prorated fields of West Texas greatly in excess of pipe line capacities, but the other interests mentioned require to either build up controlled oil yields or purchase from others in order to take care of line requirements at higher than present working levels.

Texas division pipe line runs from the Permian salt basin now fluctuate between 290,000 and 295,000 barrels daily compared with total capacity of systems serving the region of 430,000 barrels. Tank car shipments, mainly from Southern Crude Oil Purchasing Co., out of the Winkler district, approximate 20,000 to 25,000 barrels daily. Refineries local to West Texas run from 42,000 to 45,000 barrels of crude to stills daily.

As compared with crude distribution fluctuating between 350,000 and 360,000 barrels daily, shown in the preceding paragraph, West Texas salt basin production approximates 320,000 to 330,000 barrels daily, indicating a consistent draft on stocks of the region.

The 11,000 barrels daily production of Lea county, New Mexico, also should be figured in a survey of crude withdrawals from underground reservoirs, although at present this does not all move into consuming channels.

Present Lea county production includes about 3150 barrels daily by the Cranfill-Reynolds interests in the Lynch-Lea area; 3700 barrels of The Texas Co., mainly in the Lynch-Lea area; 750 barrels of the Texas Pacific Coal & Oil Co., about midway between the Lynch-Lea and Jal areas; 750 barrels daily of the Humble Oil & Refining Co., near Jal, and the remainder distributed among the Midwest, Skelly and Continental companies in various parts of the country.

Look Who's Here! It's Abner Davis Again

NEW YORK, April 21.—Abner Davis, who will be remembered by many in connection with promotion of oil stocks at Fort Worth some years ago and particularly by oil men for his "one-man refinery" is now facing a fraud order from the Post Office Department as the promoter of the Helioplane Co. of America.

This latest promotion offers fractional interests in a patent which may never be granted, on a purported flying apparatus that has never left the ground, the National Better Business Bureau says. That bureau pointed out, in a recent bulletin, some of the previous Davis promotions, saying that investors had lost money in all of them.

Since the fraud order issuance, Davis has moved to Windsor, Ont., where he continues his solicitation, the bureau says. His son, Abner, Jr., is reported to be in charge of the Fort Worth office.

WASHINGTON—A regulation which would compel oil producing companies in Alberta, Canada, to sell unrefined gasoline and distillate to farmers and others for use in tractors, engines and other purposes, at the well at a price to be fixed by the Government, will be introduced in all future leases covering natural gas and petroleum issued by the provincial government, following a resolution submitted by members of the legislature recently, according to the Bureau of Foreign and Domestic Commerce, Washington.

Wildcat of Payne County Indicates New Misener Pool for Okla.

By William F. Lowe
N. P. N. STAFF WRITER

TULSA, April 19

WILDCATS, always interesting, led in the Mid-Continent news for another week even though most of them proved to be nothing but expensive failures. The only real hit was registered in Payne county, Okla., where a well bottomed in the Misener sand flowed 1825 barrels the first 24 hours.

Grant and Seminole counties heard swan songs as their respective deep tests found water where the lower pays were supposed to be, but both of the wells are worthy of attention. In Harper county, the Sinclair Oil & Gas Co., No. 1 Howell made a new deep record for the state without finding anything except some geologic data, while an oil show turned up in a wildcat in Woods county.

In the Oklahoma City pool the new ones kept coming in at an increased rate and they were not any smaller than usual either. The pool was extended to the southeast with the deepest producer yet drilled in the area and the limit of the pool in this direction was determined by another hole that appears to be dry. The Chandler area of Lincoln county continues to be interesting with its new large wells and the wildcat of the Continental in Garfield county improved with deepening.

The Texas Panhandle and Kansas just rocked along without anything much in the way of new development. The wildcats reported last week in both areas were subjected to a little different treatment and some responded nobly. In the former, the well of the Operators Oil Co., in Moore county has had the bottom water plugged off and though it has not come back to its former producing level of 80 barrels an hour, there is no reason to believe that it will not do so. New operations are getting under way and a new pool is anticipated.

Reiter Foster Brings In Payne County Wildcat

Of all the reports of the week the one covering the wildcat discovery of the Reiter-Foster Oil Corp., in Payne county, Okla., is the most interesting. This well, the No. 1 Finnell-Community, C NE NW, 8-19-1W, found a surprising production in the Misener sand which was topped at 4830. At a total depth of 4837 it began flowing and put 1825 barrels of 41.6 gravity oil in the tanks the first 24 hours. It is now making an average of 65 barrels per hour.

As shown on the accompanying map there are several dry holes in the immediate vicinity of this well. Two small producers, bottomed in the same horizon, are within one half a mile on the east but their pay is a dolomite, not a sand. That of the new well is an angular grained quartz sand. All of the wells in the district, except the large producer, have been drilled on to the Simpson but this formation has carried nothing but water, and in only the two small wells mentioned above was the Misener productive. Both wells plugged back to this horizon, at an average depth of 4800 feet, for their production.

Continental Fails To Find Misener Sand

The dry hole of the Continental in 10-19-1W did not find any Misener at all, which leads to the conclusion that there may be a saddle between the north-south highs that seem to bound the township on the east and west. Subsurface indications in the area point to one major structure with two local highs though it is thought that the new production is due more to sand conditions than to stratigraphic irregularities. Its position on regional trends between some of the major pools of the state, however, makes the area interesting and geologists are anticipating a Wilcox pool somewhere in the neighborhood.

The well was drilled by the Reiter-Foster on acreage owned jointly with the Prairie Oil & Gas Co., Continental Oil Co., and the Twin State Oil Co. North and east offsets are being moved in and a land play of fairly good proportions is on.

About 15 miles northwest of this area, in Garfield county, the Continental Oil Co., No. 1 Brown, was only slightly benefited by being deepened further into the Simpson. In a sandy lime found at 5931 the well made two flows totaling 237 barrels of 45.2 gravity oil. It is still being drilled in the hope of finding the Wilcox and larger production.

West of Chandler, in Lincoln county, shown on the map herewith, the two wells of the Magnolia Petroleum Co., have shown a tendency to increase their flow over their initials of last week. Both wells, No. 2 Benedict, NE SE NE, 7-14-4E, and No. 2 Decker, SW SE, 8-14-4E, are Siliceous lime producers after having been deepened from the small upper pay. The former is making over 1800 barrels and the latter 2600 barrels under back pressures of 200 and 400 pounds respectively. That is nice production in any field and has resulted in new operations as regards new locations and old wells being deepened. Pipe lines are increasing their capacities to take care of expected future needs. The 12 wells in the area are now producing a daily average a little above 5000 barrels.

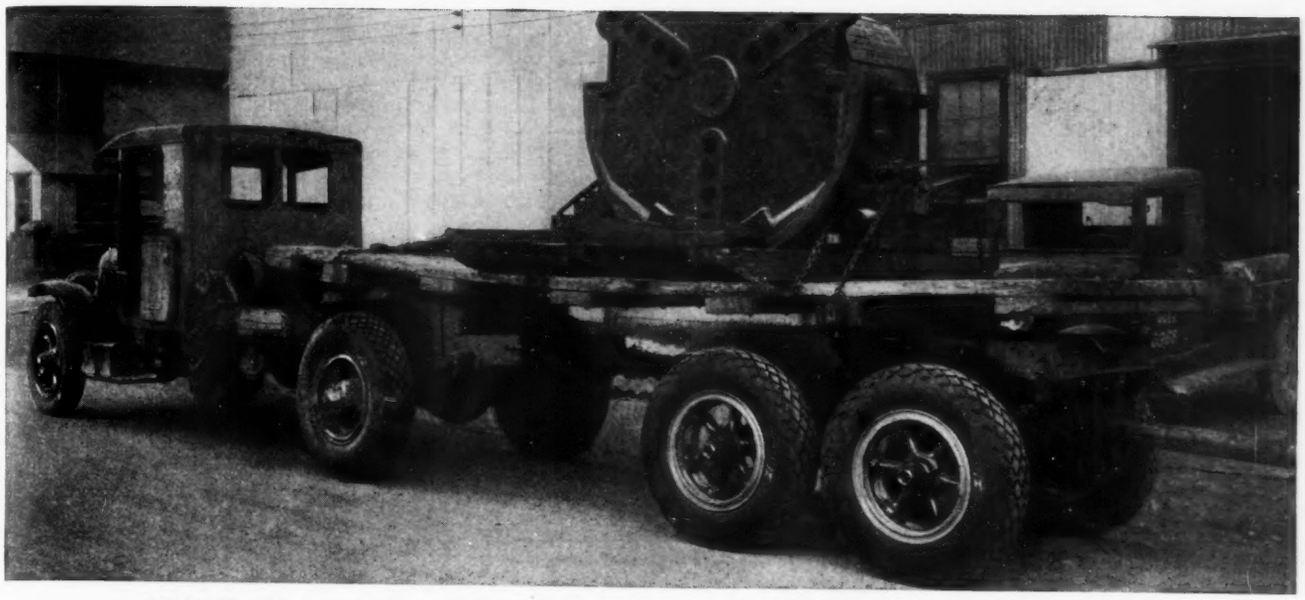
In the Mission pool of Seminole county, the No. 9 Barkus of the Gypsy Oil Co., NW SW SW, 6-8-6E, had 5500 feet of water in the hole at a total depth of 6188 feet. Since this was in the Arbuckle the possibility of deep production in the old Seminole pool seemed even further removed.

The Sinclair Oil & Gas Co., now has the deepest well ever drilled in the state of Oklahoma in its No. 1 Howell 14-26-24W, Harper county. The well topped the Mississippi lime at 6950 and was still in that formation at its last reported drilling depth of 8419. If the whole section thickens in this locality in the same ratio as this one has the well will be plenty deep if, and when it reaches the Wilcox. A normal thickness of the Mississippi lime is about 300 feet. The Sinclair well in Woods county, 36-27-16W, had 15,000,000 gas in the Woodford shale and is now rigging up rotary at a total depth of 6787.

Shaffer Drilling at 5396 In Woods County

The Shaffer-Peerless well, 23-28-16W, Woods county, had a show of oil in the Mississippi lime at 5385 and is drilling at 5396. This formation was topped at 5385, over 1600 feet higher than the Sinclair well in Harper county.

A little over a mile south and east of the Oklahoma City pool in 8-10-2W, the joint operation of the Prairie, Slick and Phillips, seems to be a dud at 6670 feet. Even a big shot failed to bring anything but water into the



Oil field hauling is one of the hardest of all tests for a tire. C. E. Musslewhite, Houston, Texas, inventor of the trailer pictured here, operates 14 large trucks with trailers — practically all on Goodyears.

It stands to reason you can haul more

OIL FIELD EQUIPMENT *on Goodyears*

Everybody wants long service from tires. Everyone wants freedom from trouble. Everyone wants safety—and a low cost per mile.

It stands to reason that the tire which meets these requirements best is the tire that will be most widely used. And *more tons are hauled on Goodyear Tires than on any other kind*—which is another way of saying that more truck owners find Goodyear Tires best suited to their requirements.

The oil and gasoline industry uses a wide variety of tires, but Goodyear builds the right type of tire for every hauling duty. Goodyear Dump Truck Pneumatics have made a record for stamina and traction in the production end. They carry heavy loads over roadless fields and pull through where other tires would sink and spin. Goodyear Truck Balloons—the newest comers in the field—are also delivering spectacular performance under the harshest operating conditions—as well as on distributing trucks which must make speed on the open road.

Goodyear Truck Tire Service Station Dealers can give you accurate recommendations for the right type and size of tires for your kind of hauling. It will pay you to know what they have to offer.

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hole and it looks as if the south edge of the producing area was not so very far away from present production.

The nearest producing well to this dry one is the Sinclair Oil & Gas No. 3 Vencl, NE SE, 31-11-2W, which gives the pool a small stretch to the south and east. It was brought in during the past week as the deepest oiler in the pool, making 4580 barrels in 12 hours from a total depth of 6667. This well, with the nine others that were completed for similar amounts during the week, will change the potential estimate made recently by Otto Bradford, proration umpire of the field. His figure of the present daily potential was 1,350,000 barrels.

Gas Meters

(*Continued from Page* 41)

range it is practically impossible to read any closer than one-quarter of an inch.

In installing an orifice meter if it is to be a line connection the up stream tap should be two and one-half diameters of the pipe away from the face of the flange and the down stream tap should be made eight diameters away from the face of the flange. If this is a flange connection the taps are made one inch from the face of the flange on both the up and down stream connections. The different settings of course call for a different coefficient for the same size plate. For instance a coefficient for a 4-inch line, a 1-inch orifice plate, based on 2 pounds pressure base, .60 gravity, 60 degrees temperature, 14.4 pounds atmospheric pressure, is 237.50 for flange connections and 248.40 for line connections. It is recommended that an orifice plate greater than 6/10 of the size of the pipe should not be used.

In making meter connections the opening on the pipe or flange should always be free of burrs or welding material. The most satisfactory method of making these taps is to weld a collar on the pipe, provided this is a line connection installation, and drill an opening through the collar, using a sharp edged instrument for clearing away any burrs that the drill may have left. This opening should never be burned with a cutting torch.

In installing an orifice meter with flange connections if the up stream fittings are two ells in the same plane the distance from the ell to the flange should not be less than ten pipe diameters and with the conditions the same on the down stream side the distances should not be less than five pipe diameters. This also governs the condition where there is only one ell. If this is a line connection installation under the same conditions

Map showing relationship of wildcat wells of Reiter-Foster, and Continental Oil Co., to big producing areas of central Oklahoma

as mentioned above the distance from the point where the up stream meter connection is made to the ell should not be less than ten pipe diameters and the down stream distance should be not less than five pipe diameters from the meter connection to the ell. If a regulator is installed within 200 pipe diameters up stream of the meter connections it is necessary to install a straightening vane not less than six pipe diameters up stream from the meter connection. A pressure regulator or differential valve or check valve should not be placed down stream from the orifice plate closer than ten pipe diameters to the down stream pressure tap.

In measuring gas by orifice meters the quantity varies directly as to the square root of the differential and the square root of the absolute pressure. Therefore, as the differential increases with all other conditions remaining the same the volume increases. So is the case when the absolute pressure increases and all other conditions remaining the same.

In order to obtain accurate measurement by an orifice meter it is very necessary to know the specific gravity and the flowing temperature of the gas as the quantity or the coefficient varies inversely as to the square root of the specific gravity and also varies inversely as to the square root of the absolute flowing temperature. In measuring gas from a well the gravity is usually obtained by tests made with a gravity balance and the temperature is usually assumed as 60 degrees for an average throughout the year. If the measurement is at a point where the gravity and temperature vary it is necessary to install a recording gravitometer and a recording thermometer. The usual procedure for correcting for varying conditions is to compute a coefficient, assuming a gravity and flowing temperature and correct monthly for the actual temperature and gravity.

In computing orifice meter measurement the formula is $Q = C \times$ the square root of HP_2. Q equals the quantity, C equals the coefficient, H equals the differential pressure, P_2 equals static pressure absolute. In calculating or even looking up a coefficient in the meter companies' hand books it is necessary to know the following conditions: the line size, the plate size, type of connection, the contract pressure base, specific gravity, the base temperature and the flowing temperature. The formula for calculating a coefficient is $C = 218.44 \times Ed_2 \times \frac{T_b}{P_b} \times$ the sq. rt. of $\frac{1}{T_f G}$.

E equals efficiency of the orifice, d equals size of orifice, G equals specific gravity, P_b equals pressure base, T_b equals temperature base, T_f equals flowing temperature, 218.44 equals the constant and C equals the hourly coefficient.

In gasoline plant operation the measurement usually is under a vacuum condition and the same method of procedure is used with the exception of the record of the static pressure. Therefore, in computing an extension it would be necessary to reduce the inches of mercury as registered by the static recording gauge to pounds per square inch and instead of adding to the atmospheric pressure this amount is deducted, which gives you the absolute pressure. The formula would be $Q = C \times HP_2$ just the same as if the measurement was taking place under high pressure.

In calculating or computing orifice meter charts the square root of the differential times the square root of the pressure as shown on the chart plus 14.4 times the coefficient for the plate that is installed at the point where this record was made, is equal to the quantity passed for differential times the square root of the static pressure plus 14.4 or the absolute pressure you have arrived at what is known as the extension. In most cases in computing charts the charts are read by the inspection method, which is simply placing a differential reading and a static pressure reading on the chart which shows the average of both pressures for each hour. Hourly extensions are then placed on the chart and the total of the extensions is multiplied by the coefficient, giving you the amount of gas that has passed this point for the period of time which the chart covers.

BY THE time these comments appear the Independent Petroleum Association of America will have held its Fort Worth meeting. The lines along which its future activity will be pitched appear elsewhere in this issue. The convention—its first—is important as an indication of the determination possessed by independent producers and refiners to keep on trying for a tariff.

The man who has led the campaign, Wirt Franklin, has plenty of that determination. We think he is one of the most persistent workers in the face of long odds that we have ever seen. He has been hammering away on this subject for a long time and since the I. P. A. A. was organized in Colorado Springs last June he has kept the subject very much alive. And his forces have grown. Several of the substantial units in the Mid-Continent and Texas have given aid and encouragement and have taken paid memberships in the association.

As yet none of the major companies has made a declaration on the subject except the Pan-American group, which filed a brief in opposition last summer. H. F. Sinclair, chairman of the board of the Sinclair Consolidated, seems to have come quite close to declaring in favor of a protective tariff on oil in a statement published last week in the Daily Oklahoman, of Oklahoma City.

That statement appears to be a reply to questionnaire which that newspaper sent to oil company executives asking for their views on unit development and proration. Mr. Sinclair began by saying that his company had gone along with the conservation program that has been in effect for the past three years.

He said that it is a "commonplace" to say that oil should not be wasted, or produced in excess of requirements, but this is not the whole story. Is it not wise to look upon the results of the past and the tendency of present policies and try to see where they are leading us? Certainly conservation, co-operation and proration have not produced the necessary results so far—unless one assumes that we should have been worse off had not these policies been followed to some extent.

"Is it not pertinent," he continued, "in this connection to inquire whether the Mid-Continent field can rest its future prosperity solely upon what you call 'extreme proration?' Must it be content with only the crumbs that are left from the table of the rich men of the East, and of Europe?

"I ask these questions because to meet the competition of a relatively small amount of imports, affecting only the eastern markets, Mid-Continent prices were reduced to a point below the cost of production. In the absence of a tariff may not this same influence (intensified by distributional competition in a limited territory) force us back still further and lead to even more extreme proration? . . .

"It does not seem to me quite reasonable that a man who has over-eaten (especially of foreign dainties) should demand that American farmers, for example, should stop raising so much food in order to prevent the occurrence of further gluttony."

* * *

Herewith we present an action photograph of a new way our industry is working for humanity. Readers doubtless are informed that a strange malady, "jake leg," has struck a number of localities. It is supposed to be caused by drinking Jamaica Ginger, commonly called "jake." Its manifestations are painful swellings of the legs and partial paralysis of those members.

It seems that early last week one of the victims fell into the slush pond at the Skelly Oil Co. refinery at Eldorado, Kans. He came out with the announcement that he was cured. The next morning 16 men were out there soaking their legs in this oily refuse. It contains, besides oil, mud, water, caustic soda, lime, sulphuric acid, sulphur, an occasional dead cat and some other ingredients.

The Golden Rule refinery at Wichita was a much-visited place, also, and, as the newspapers gave publicity to the "cure," other refining centers became as popular as are some of the famous mineral baths of the country.

It was to be expected that someone would try to spoil the theory. Medical men of Wichita said they were certain

These are not men who have heard the call of Spring and have gone back to boyhood's custom of wading in the babbling brook. They are seeking to cure "jake leg" by using the Skelly Oil Co.'s refinery slush pond at El Dorado, Kans.

PIPE BENDS
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there was no efficacy in the slush pond treatment; such a stunt, they said, might work on skin eruptions and rashes, although they doubted that, but it would do no good in "jake" paralysis, which was a nervous disorder requiring rest and patient upbuilding of the nervous system.

We at once interviewed Glenn Condon, director of public relations of the Skelly, knowing that he would have the truth of the matter.

"Professional jealousy and maybe politics," was the way he disposed of the doctors' arguments.

* * *

Ellick Botts, formerly known as the popular ex-pumper of the Gray Horse district, desires that a change be made in his entitlements. From here on he shall be known as Consulting Pumper.

* * *

Committees on Explanations have been formed in Tulsa and Oklahoma City to be ready with the good old boloney when the census figures are made public. The Tulsa committee seems to be working a little harder and some of its findings were unofficially released through a newspaper recently. It seems that if Oklahoma City makes the better showing it will be on account of so many Tulsans living temporarily in the capital city while the oil boom is on. Oklahoma City expects to show around 200,000 population this time.

* * *

Unemployment in the Mid-Continent oil fields has led to an increase in pilfering from oil leases. We came upon a district superintendent in the act of requisitioning a shotgun for one of his farm bosses. The superintendent said that he had lost nearly an entire derrick. It was standing over a well and some experts at the job stripped it from the bottom up several girths. We drove to one of his leases and when he turned off the highway to the road across the lease he found that during the night someone had stolen a small bridge made of heavy planks. The condition is said to be general.

* * *

And, speaking of the whimsicalities of state governments as we were a few paragraphs back, Oklahoma isn't the strictest man of its word, either. The state school land board recently voted to lease 320 acres of land in the Nichols Hills district of Oklahoma City to the Gypsy, Dixie and Sinclair companies. The Dixie had bid $8,200 cash and $4,000 in oil for the east half of the northeast of 36-13-4w; the Gypsy $10,120 cash for the west half of the northeast and the Sinclair $8,200 for one "eighty" in the southeast quarter of the same section and $12,240 for the other "eighty." The companies thought the matter was disposed of.

A week later the board met again and voted that it had changed its mind and wouldn't lease, after all. Some of the members, including the governor, thought more money could be had later on when the price of oil is better. A private transaction vested with as much formality as that was would be strictly enforced in the courts. A government always seems to be excused on the ground that it is by nature fickle, light-hearted and responsible only under rules it may think up from day to day.

* * *

"Scientist May Find Oil Pools by Arithmetic," says a headline. History and geography are also quite valuable in such quest.

* * *

Our weekly award of one century plant, half-way along to blossom time, is given to Dr. J. D. Young, Independent dry hole operator, of Midland, Tex. the doc has put down 18 of the critters and is at work on the next one. Fortunately he has a chain of furniture stores to absorb his losses.

* * *

It is distasteful to spoil a good story but the narrative that has made the rounds of the daily press concerning the two vaudeville performers who are alleged to be enjoying an income of $9,000 per day from a well in the Oklahoma City field is somewhat exaggerated. The well in question is not yet permitted to produce. When it is, giving it a maximum rating of 20,000 barrels daily, initial it will yield to the royalty owners one-eighth of that amount. Then it will be produced one day out of six, under the proration rules.

At the going price for oil it would mean $585 per day. There is a partner in the enterprise who would get part of that sum. Their press agent is saying that they have refused a million dollars for their "holdings"—town lot acreage. We urge the happy actors to take it, if it is in anything but stage money. Yes, even if it is only a quarter of the amount named. Or a tenth, even.

* * *

Joe I. Cromwell, oil operator, found time to transact a little business while in Washington on the oil tariff campaign. He bought the Shoreham office building, 12 stories, for three and three-quarter million dollars. Mr. Cromwell made his first big strike in the pool which bears his name, one of the big developments of the Mid-Continent in 1924.

He sold his holdings to the Carter Oil Co. and went on a vacation. It was four or five months before anyone knew where he had gone. Someone happened to run into him in Honolulu. He had, in the meantime, toured the United States, stopping at the lesser known hotels and just generally enjoying himself.

He is quite thoroughly back in the oil business now. With Wirt Franklin he owns some of the best acreage in the Oklahoma City pool and has extensive royalty interests in that field and elsewhere.

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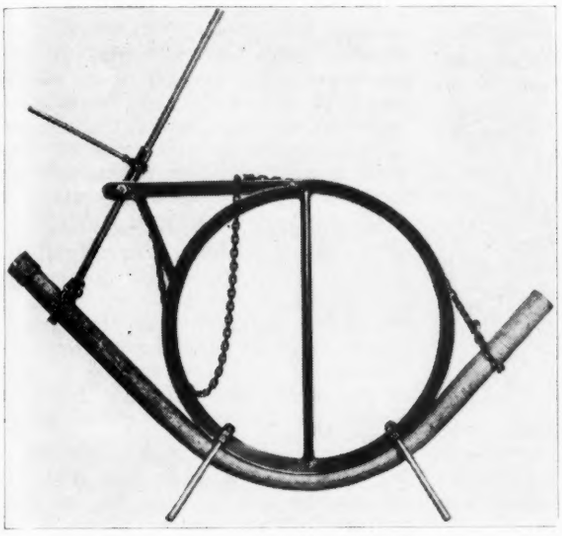

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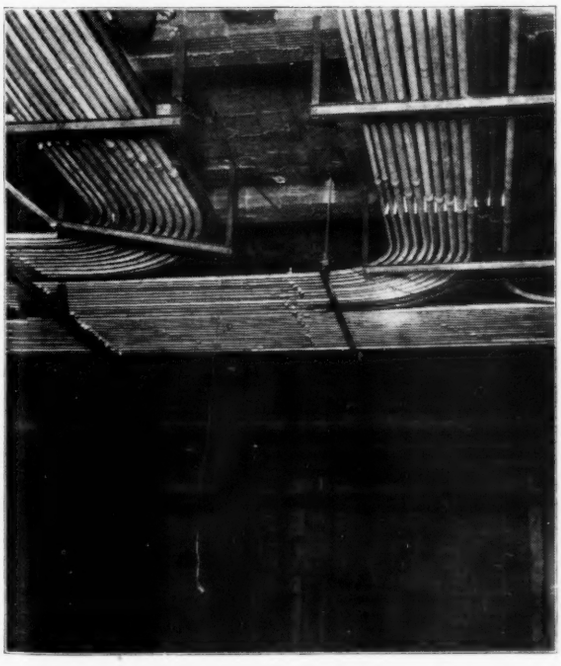

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By Jack N. Westsmith
N. P. N. STAFF WRITER

LOS ANGELES, April 18

A NUMBER of important tests scheduled to be made of critical areas on the Pacific Coast within the next ten days are expected to raise the local development and production situation out of its featureless depths.

Although the expected test of Belridge Oil Co.'s No. 15, in the Belridge field, failed to materialize, operators have not given up hope that this deep project will ultimately result in the discovery of a new high gravity oil field in the San Joaquin Valley. A very limited amount of information is being issued on developments at the well but field reports indicate a production test will be made early in the week.

Another interesting project in the San Joaquin Valley and one that is assured of obtaining commercial production is being drilled on fee land by Associated Oil Co. on Sec. 35, 21-17, the north dome of Kettleman Hills, offsetting Petroleum Securities Co.'s Felix No. 1, completed several months ago for an initial production of 4000 barrels of 60 gravity oil per day.

Associated's well, Whepley No. 1, is drilling ahead below 6756 feet in brown shale. It is known to be down structure from Standard Oil Co.'s No. 38 also offsetting the Felix well on Sec. 35 and so may not strike the pay sand for several hundred feet.

In accord with the statewide curtailment movement in effect on the Pacific Coast, Standard has suspended its project at 7392 feet in the oil sand. Associated is reported to be required under its lease obligations to complete its Whepley well, in which case it is expected Standard will finish its well and Continental Oil Co.—offsetting, Standard, Petroleum Securities, and Associated Oil Companies, on government permit land to the South—will have to either drill protecting line wells or see its oil reserves drained.

The wells drilling on fee land, have, at present, over four months advantage of Continental and numerous inequities will arise in the event they are completed and the existing Kettleman Hills conservation agreement is not modified to allow operators holding permit lands to commence drilling operations.

Drilling operations in the townlot area of Potrero, southeast of the Inglewood field, that have heretofore failed to obtain large commercial production, were successful during the past week when Sunset Pacific Oil Co. completed its Inglewood-Community No. 3 for an initial production of 1800 barrels of 40 gravity oil from a depth of 5371 feet.

Previous completions in this district have failed to stand up under steady production because of broken condition of the formation. Sunset's new well, which at latest reports was still flowing in excess of 1400 barrels per day, is producing from approximately 90 feet of excellent oil sand, although it is located near a pumper drilled by George F. Getty and only slightly over a mile from Associated Oil Co.'s Potrero No. 1 both of which are small producers.

Preparations are now under way by other companies in the area to deepen their projects in an effort to strike the new pay sand and to remove mechanical difficulties encountered in the shallower zones.

Los Angeles Basin operators have long looked upon Potrero as a potential oil field, due to its location on the Beverly Hills-Newport uplift between existing fields of Inglewood to the northwest and Rosecrans to the southeast. If Sunset's newest completion does not develop water troubles or sand up, as has been the rule of other wells it is expected an extensive drilling campaign will be inaugurated.

At Huntington Beach, near the end of the above mentioned Beverly Hills-Newport uplift, Barnsdall Oil Co. has undertaken to give the deep sands of the field a thorough test. It recently leased 170 acres adjoining its Borchard holdings of 60 acres, making a total of 390 acres this company holds at Huntington Beach.

Barnsdall's Newland No. 1 is drilling ahead below 5615 feet and, although the report could not be confirmed, it was rumored excellent oil sands had been penetrated. The project will be drilled to below 6500 feet to test out lower horizons and to obtain geological data for use in drilling other wells.

Although geologists have agreed Huntington Beach, like other Los Angeles Basin fields, would yield considerable crude oil from possible lower zones, voluntary conservation agreements among operators have combined to defer the drilling-in of these sands as long as possible. If Barnsdall succeeds in obtaining production from its deep test other companies, to protect their interests, will be forced to extend operations to the lower levels.

Daily production from Signal Hill may show a decided increase during the coming week if several wells now swabbing out are successful. Four small completions during the past week failed to add materially to the field's total of 99,360 barrels as of April 17. Extensive drilling operations in the southeast and northwest ends of the field are expected to offset a reduction in the crude output of the field due to natural decline.

Through a temporary withdrawal of the gas law restraining order at Santa Fe Springs, effected by a writ of prohibition obtained by the Wilshire Oil Co., production of crude oil and natural gas showed a decided increase during the past week as compared with a week ago.

Notwithstanding the effort of

Voluntary Proration Extended 6 Months

LOS ANGELES, April 19.—Santa Fe Springs operators have agreed to continue the voluntary curtailment program for an additional six months, reducing their daily average production to 110,000 barrels per day, provided other fields in the state cooperate in the movement scheduled to cut the state's total daily output to 575,000 barrels over the period.

This decision was reached April 18, at a general meeting of Santa Fe Springs operators called by H. R. MacMillan, chairman of the Santa Fe Springs Operators' Committee, to discuss the threatened opening up of wells at this field through partial impairment of the gas conservation law.

Representatives of other fields in the state indicated the operators in their districts would cooperate in any movement that was 100 per cent effective over the state.

In making this drastic cut in crude production it was stated, a daily withdrawal of approximately 45,000 barrels from crude stocks on the Pacific Coast will be necessary to supply the economic demand of the western market now amounting to 615,000 barrels per day.

major operators to prevent a breakdown to the curtailment resulting from enforcement of the law, crude oil production was 134,008 barrels on April 15 compared with 120,339 barrels on April 8, while natural gas output for these two dates was 372,320,000 and 328,172,000 cubic feet per day respectively. Wilshire Oil Co.'s production increased from 12,238 to 17,002 barrels of oil and from 36,420,000 to 53,273,000 cubic feet of gas during this period.

George F. Getty, Inc., one of the large independent companies and one to suffer considerably through enforcement of the restraining order, had increased its production from 7769 to 8340 barrels of oil and from 35,636,000 to 38,160,000 cubic feet of gas per day over the week following granting of the "writ."

In sharp contrast to the comparatively small production being obtained from completions in other parts of the state, Barnsdall-Rio Grande combinations tideland permit well No. 88-2, which was completed late last week for an initial production of 3000 barrels of 38 gravity oil from a depth of 3490 feet, raised its daily output to 10,163 barrels on April 15 to go on record as the largest producer in the history of the field and the present largest producer in the state.

The combine's latest completion is located on a pier 600 feet off shore and is an offset to Pacific Western's recent tideland gusher, 92-4, which increased its flow from 2800 to 9656 barrels per day during the six-day open flow test, run to determine the project's potential production.

With three additional tideland wells in this area, scheduled for completion prior to May 1, it is expected that the field's potential production will be increased from its present figure of 90,000 to over 110,000 barrels per day. This field, with less than 30 wells on production, has a daily allowable and potential production in excess of that at Ventura Avenue, which has more than three times as many wells. At present Elwood has an allowable daily production of nearly 53,000 barrels as compared with 46,000 barrels at Ventura Avenue.

Encouraged by the showings found in the ocean floor at Elwood, General Petroleum Corp. is preparing to make another test of its tideland project at Rincon, northwest of Ventura Avenue.

This project, No. 2 Ferguson, has been completed for small production in the thin oil sands found between 2600 feet and its present depth of 3908 feet, but each time the flow has been mudded off to test out possible underlying sands.

Richfield Oil Co., and Elwood Exploration Co., both holding tideland permits offsetting General Petroleum's test, are reported to be making preparations to commence drilling.

In line with this exploration work on the tidelands at Rincon Chanslor-Canfield Midway Oil Co.'s Hobson A-2 on section 23, 3-24, a wildcat testing out a possible extension of an uplift extending between Rincon to the northwest and Ventura Avenue to the southeast, is reported to have cored a likely looking oil sand between 6620 and 6715 feet. Shell Oil Co. has drilled several wells on the Ventura Avenue end of this uplift with fair success, but due to the highly folded condition of formations in this area any prediction must contain a certain amount of doubt.

Predict Gas Law Failure Unless Small Producer Is Protected

LOS ANGELES, April 19.—"California's natural gas conservation law is destined to be a failure unless the existing temporary restraining order in effect at Santa Fe Springs is so modified that it does not work hardships on the independent operator."

This represents the convictions of a large number of small producers—15,000 barrels or less—at Santa Fe Springs and although it was the Wilshire oil group that brought matters to a head by taking out a "writ of prohibition" preventing the superior court from enforcing the injunction on the group's holdings at "the Springs," other companies have expressed their dissatisfaction with results obtained under the law.

On petition of a number of companies including both large and small operators, the court made a slight modification in the existing order to include 13 wells completed since March 19, the effective date of the order, and to compensate operators having line wells offsetting producers of the Wilshire oil group.

May 1 has been set by the court for a continuance of the hearing to adjust inequities resulting from enforcement of the law at Santa Fe Springs and it is expected that at this time operators will ask that the method of allotting gas production among leases on the field be modified so as not to injure companies having high gas-to-oil ratio wells.

When the hearing was reopened, April 14, the committee of experts appointed by the court to study physical conditions at this field recommended that the court should suspend the order in as much as it considered it impossible to arrive at an equitable distribution of gas production as long as some operators were outside the scope of the order.

State legal counsel, James S. Bennett, was successful in having this recommendation denied although other operators had indicated that if certain modifications were not made they might follow Wilshire's lead and ask for a restraining order to prevent enforcement of the injunction.

Judge Crawford, hearing the Signal Hill case, has already indicated he would not favor any restraining order that might be inequitable to small operators and it is anticipated the court will insist upon a very different restraining order from that granted at Santa Fe Springs, when the hearing is continued at the Beach field, April 28.

Hearing on the Kettleman Hills gas law case was continued to June 2 upon application of state officials, when the trial was reopened at Hanford April 16. A showing was made at this time that natural gas production on the north dome of "the Hills" had been cut 40 million cubic feet. Operators stated tests were under way to determine methods of increasing back pressure on producing wells as an aid to further decreasing natural gas wastage.

S.O. California Completes Kettleman Hills Well

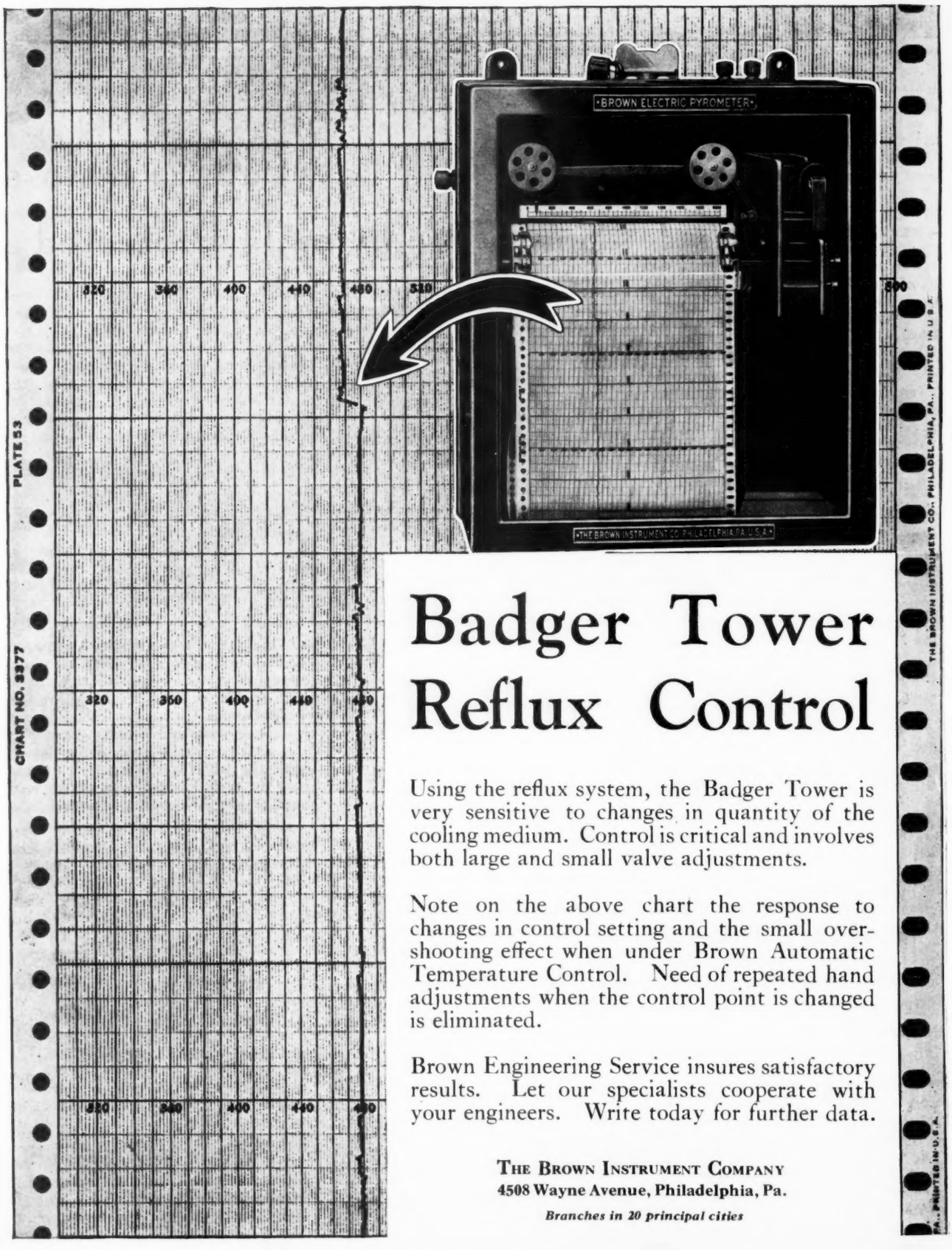
By Telegraph

LOS ANGELES, April 22.—To prevent further drainage from its fee land, the Standard Oil Co., completed well No. 38 on Sec. 35, on the north dome Kettleman Hills, direct offset to Petroleum Securities Felix No. 1 on the same section.

Initial production of the new well April 19 was estimated at 2100 barrels, 60 gravity oil and 52,000,000 cubic feet wet gas from a depth of 7392 feet.

No. 38 has been standing plugged on oil sand since soon after the Felix well was completed and according to Standard officials would have remained suspended if production from Felix had been curtailed.

The California state department of natural resources received a reverse last week when the state supreme court denied its request that injunction proceedings against Superior Judge Hazlett be transferred from the appellate to the supreme court and that the alternative writ of prohibition obtained by the Wilshire group be modified. At the opening day of the hearing on this writ the appellate court set time limit of days for appellant companies to file briefs of their argument and give additional days for state officials to file rebuttal briefs.



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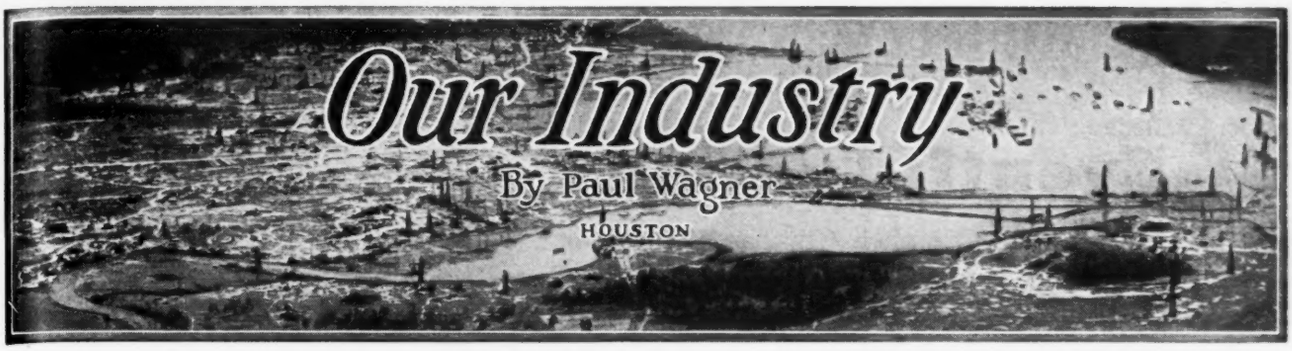

RALPH D. REED, the new first vice president of the American Association of Petroleum Geologists, elected without opposition at the recent new Orleans meeting, heads the geological activities of The Texas Co. of California, with Los Angeles headquarters. He has been in The Texas Co. organization since the spring of 1929 when he left the old Marland Oil Co. of California, in the service of which he had spent five and a half years.

Mr. Reed was in the Marland of California organization from the time it operated in Pacific territory as the Coast Land Co., under Carl H. Beal, its original head in the western region. After transferring his allegiance to The Texas Co., in 1929, he was attached to the geological department until the resignation of Irvine Stewart, whereupon he was placed in charge.

Before taking up active industrial work, Mr. Reed taught in the University of Oklahoma, at Norman, where he engaged also in special studies. He was graduated from Hiram College, Ohio, in 1913, took post graduate work at the University of Illinois and completed his study for a Ph. D. degree at Stanford in 1922.

* * *

Active management of the Big Lake Oil Co., at Texon, Reagan county, West Texas, has been assumed by Charles Byers, who succeeded E. C. Stearns as general manager. Mr. Stearns left Texon early in April for California for his health. The Big Lake Oil Co., of which Levi Smith is president, is one of the two interests owning the Big Lake field in its entirety. The other is the Continental Oil Co. of Delaware, through its stock control of the Texon-Group One Companies.

* * *

Coler A. Yoakam, vice president of the Tri-State Royalty Co., who until recently was chief geologist of the Sinclair Oil & Gas Co., at Tulsa, has returned to headquarters after a week's trip through Gulf Coastal Texas territory. He visited the region from Raccoon Bend, in Washington county, southwest through the Three Rivers area and the White Point gas territory.

* * *

W. J. Dinsmore, owner of the Harbor Oil Co., at Aberdeen, Wash., accompanied by Mrs. Dinsmore, has returned home after a month's excursion trip to the Hawaiian Islands.

* * *

E. Stanley Durward, research engineer of the Shell Petroleum Corp., at its central division headquarters in Dallas, is the new secretary-treasurer of the southwestern district of the American Petroleum Institute division of production. The district is composed of the four states of Texas, New Mexico, Louisiana and Arkansas. Mr. Durward succeeded E. V. Foran, petroleum engineer of the Fain-McGaha Oil Co., Wichita Falls, who became the north Texas vice chairman of the southwestern district.

* * *

H. W. Pierce, newly engaged by the transportation department of the Union Oil Co. of California to assist in the engineering development of pipeline and marine transfers, was formerly connected with the construction corps of the United States Navy. He was graduated from the Naval Academy at Annapolis in 1922 and for a time served in line duty on destroyers of the Pacific Fleet. Later, he was a docking officer at the Philadelphia Navy Yard and subsequently assistant to the superintending constructor, U.S.N., at the New York Ship Building Co., Camden, New Jersey.

Lon Love, formerly field clerk in the Seminole district, has been transferred by the Skelly Oil Co., to Winkler county, West Texas, where he succeeded H. B. Payne in a similar capacity under J. C. Creedon, superintendent for Permian salt basin operations. R. C. Hopper succeeded Mr. Love at Seminole.

* * *

E. J. Hesser, formerly with the Shell Petroleum Corp., is now field superintendent for the Pure Oil Co., in the Sweet Lake district, southern Louisiana.

* * *

Herman Keithley, formerly of the oil purchasing department of the Magnolia Petroleum Co., at Dallas headquarters, has been made assistant treasurer of the Cranfill-Reynolds Oil Corp. of Delaware and has moved to Houston.

* * *

John R. (Cooney) Herr, district sales manager of the Sinclair Refining Co., at Houston, has returned home after a business trip to Mexico City. He wrote the Houston office of this periodical while on the trip that he "broke a $50 bill" in Mexico City and got his change in silver pesos. At the prevailing rate of exchange that meant his pockets were pretty full of coin—an even hundred smackers equivalent in size to American dollars.

* * *

H. E. Snyder, gasoline department superintendent in the Texas division

Ralph D. Reed

E. Stanley Durward

Billions of Bubbles

Eventful Merger

THE J. A. Campbell Company takes this means of announcing a combine that is sure to be of great interest to the gasoline industry . . . .

An integration of the "Oil-Froth" absorber and the MIST-D-FIER scrubber, effected by building into the top of their widely known absorber a section of their recently developed MIST-D-FIER.

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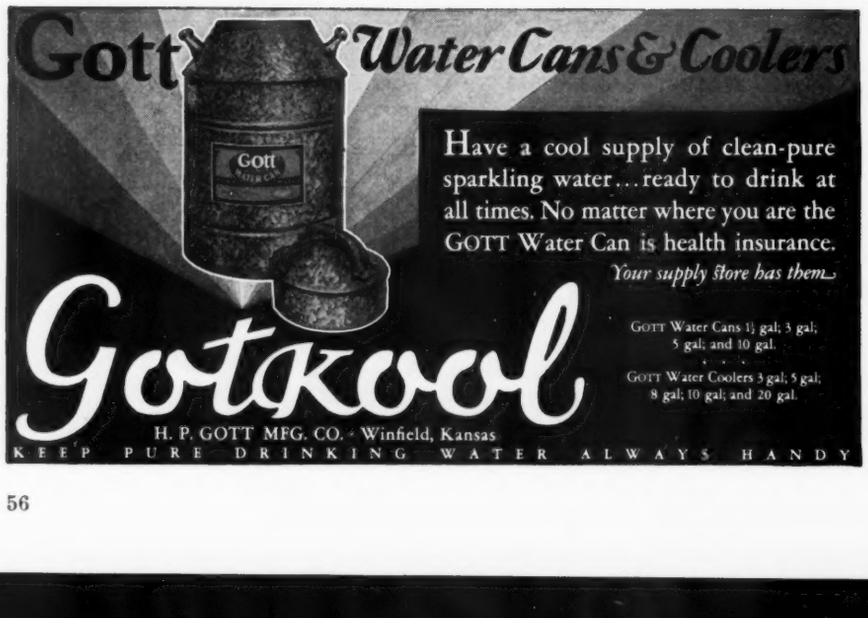
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of the Magnolia Petroleum Co., who makes headquarters at Olden, claims a service record for his Buick coupe. After it had been driven 100,020 miles the car was still good enough that a Magnolia employe familiar with its use purchased it from the company for $300. It was first overhauled after being driven 50,000 miles. New piston rings were put in it twice after that time. The car was first put in service in October, 1926, and was used from that time until March 13, 1930 by Mr. Snyder.

* * *

D. S. (Doc) Tetrick, formerly in charge of wildcat drilling for the Pure Oil Co., at Uvalde, will be in charge of a new test well rigged up on a Midland county, Texas, block of that company. The test is being drilled with cable tools.

* * *

Paul Talley, formerly Electra warehouse and machine shop assistant in the Texas organization of the Magnolia Petroleum Co., has been transferred to Wirt, Okla., as warehouseman under Superintendent Lee Hudson. He succeeded W. H. Gilliland, transferred to Wewoka, under Superintendent C. L. Gladden. Robert E. Prince of Dallas succeeded Mr. Talley at Electra, under Superintendent J. C. Shaw.

Two Gasoline Plants For Seminole

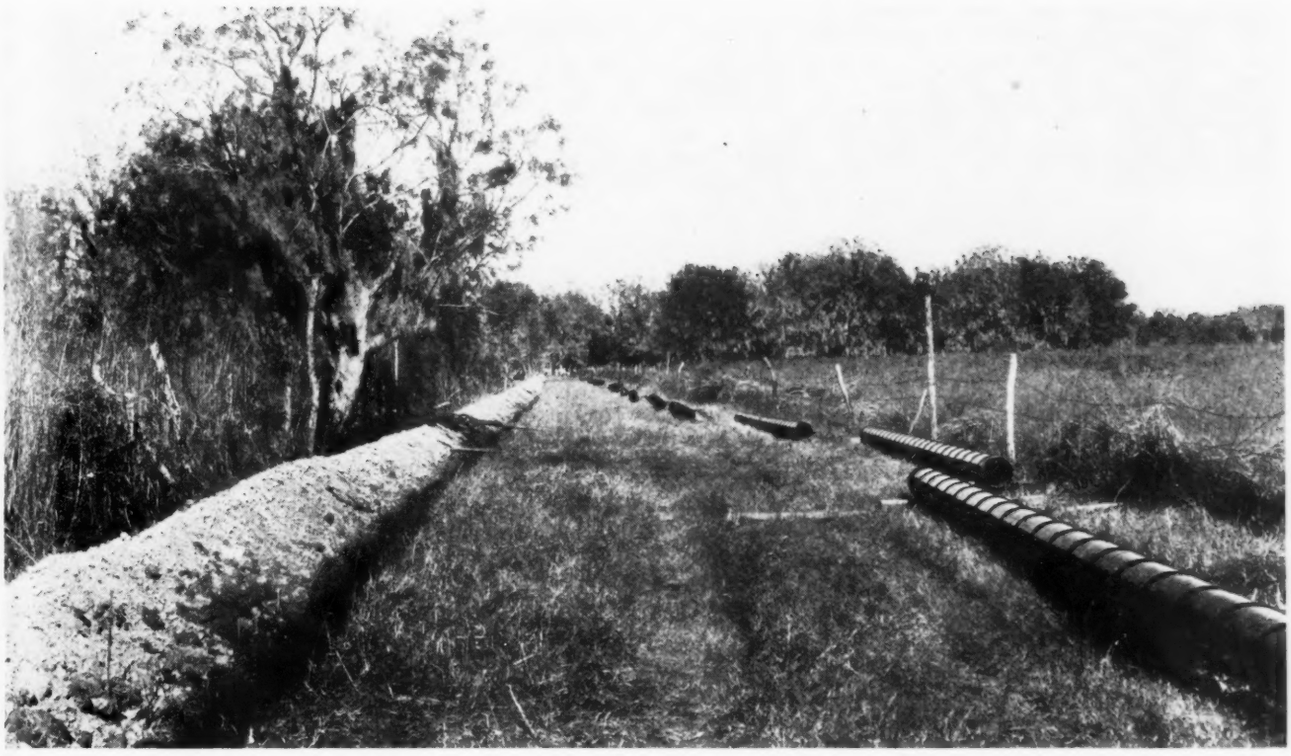
TULSA, April 18.—The Seminole district is getting two new gasoline plants, both of them built for the Carter Oil Co. One is in the comparatively young pool East Earlsboro, and the other at Bowlegs. The former will have 600,000 gallons of lean oil circulation, and a gasoline production of 60,000 gallons per day. The latter will have an initial installation capable of 350,000 gallons of lean oil circulation and a production of 25,000 gallons of gasoline daily. Both plants are being equipped with material by the C. F. Braun Co.

New Refinery for Panhandle

TULSA, April 18.—A new 3500-barrel refinery is to be built at Kings Mill between Pampa and Panhandle, Texas Panhandle. The plant will increase the independent refining capacity of the Panhandle area to some 30,000 barrels per day.

The plant is being built by the Navajo Refining Co., in which G. E. Quillan and Frank P. Jackson, of Texas, are interested together with eastern associates. The refinery is being built by J. D. Wrather and will be thoroughly up-to-date.

It is reported that a daily supply of 3000 barrels of crude oil has been contracted for with the Cockrell-McIlroy Oil Co.



Typical flat character of Gulf Coastal region through which Houston Pipe Line Co. builds its gas supply systems to industrial plants in South Texas

Asphalt Coating Protects Pipeline Against Texas Soil Corrosion

Staff Special
HOUSTON

A 2-INCH asphalt coating is being used successfully by the Houston Pipe Line Co., gas subsidiary of the Houston Oil Co. of Texas, in combatting soil corrosion and electrolysis in the swamp areas of the coastal plains region.

Almost complete insulation is afforded and sections of pipe that had been buried two years were found in perfect condition when taken up. Frank W. Kirk, general manager of the pipe line company, is authority for the statement that the economy of the method has been proved despite the relatively high cost of material used.

The process calls for application of the 2-inch coating inside some form of container, so that it may be poured and set to cover the entire circumference of the pipe. In this respect the plan is similar to a program of the Standard Oil Co. of Louisiana, some 15 years ago, when it encased a part of its Baton Rouge pipe line in concrete.

Mr. Kirk feels that an advantage of the asphalt method is that it lacks the penetration by moisture and the cracking with expansion of the pipe experienced to some extent in the use of concrete.

Since making his experiment in Texas, it has been learned by Mr. Kirk that a similar idea was tried on a small line in Mexico in 1907, because there was a large amount of asphalt available on the property and there was no market for it then. The coating was applied generously in an open ditch, a practice that ordinarily would be prohibitive in cost and also unnecessary. After 19 years, the line was taken up in 1926 and is described as having been found in perfect condition.

Corrosion in the salt and sulfur districts of the Texas coastal region has caused oil and gas companies expensive replacements in material and labor for years, especially in areas of overflow. Sections of pipe are frequently corroded to the extent of unusability after two or three years. The combination of chemicals in the soil with oxygen in air or water forms a light solution of sulfuric acid, which quickly eats into the pipe.

The first job with which the Houston Pipe Line Co. experimented was a stretch of several thousand feet of 12¾-inch pipe in Brazoria county, between Bay City and the Freeport Sulphur Co. properties near Freeport. Box troughs of yellow pine were built and lowered into the trench. Wooden cleats were inserted to keep the pipe off the bottom of the trough. After pouring a minimum coating of two inches of asphalt the trench was refilled.

A second asphalting experiment was made at the Gulf Hill plant of the Texas Gulf Sulphur Co., in a Matagorda county area subject to tidal overflow. Four thousand feet of 12¾-inch natural gas line was similarly coated in the summer of 1929.

After completing the first two jobs, Mr. Kirk began experiments with galvanized iron sheeting made especially for this work from Armco steel by the Western Metal Manufacturing Co., of Houston. Although more expensive than the wooden construction, the galvanized iron sheeting provides a saving in asphalt by virtue of its being installed in circular form to fit the contour of the pipe.

The procedure in bending the galvanized iron around the pipe is to lay sheets of it over the ditch into which the pipe is to be buried. Then the pipe is lowered slowly. In that way the sheet iron is forced to take a circular form. In the meantime,

the pipe is kept free from contact with the sheeting by pieces of wood, two and a half inches wide and two inches thick, sawed to fit snugly against the bottom and lower sides of the pipe.

Besides keeping the pipe and sheet iron separated, allowing for the thickness of asphalt to be applied, the wooden pieces serve also to keep the followers of the couplings between the joints of pipe from shearing the galvanized iron through weight of the pipe. One of the pieces of wood is placed next to each coupling.

After the sheets of iron are cupped pieces of wire are run around them and tightened, drawing the edges of the sheet iron within five inches of each other at the top. The asphalt is poured through this opening. Houston Pipe Line Co. has followed the practice of priming the pipe with a light asphalt base before lowering it into the trough for the main coating.

Asphalt used for such work, according to Mr. Kirk, should not be brittle or harden to the extent that it will crack or break, thereby insuring an impervious and corrosion-resistant coating.

A new asphalt coating job of the Houston Pipe Line Co. is scheduled for the near future, taking in several miles of 16-inch pipe in Brazoria county, between the Brazos River and Oyster Bayou, connecting the Bryans Mound and Hoskins Mound plants of the Freeport Sulphur Co.

Liquid Meter Used on Flowing Oil Well in Earlsboro

TULSA, April

MANY experiments have been made at producing wells with meters of various kinds and different principles to record the production of oil as it comes from the well. New to the Mid-Continent is the application for this purpose of a liquid recording meter which has been extensively used on tank trucks, loading rack lines for tank cars and wharf and sea-loading lines for tankers. In that connection it has been used for gasoline and other light oils and for fuel oil.

In California the meter has been applied successfully to producing wells, but until the Skelly Oil Co. installed one on its Shepherd lease, in the Earlsboro field, it had not been tried in the Mid-Continent. It has been recording the flow of one well for more than a month and its deviation from the tank gauge has been under one per cent. It records directly, in barrels, the oil which passes through the meter.

An accompanying photograph shows the meter in place on the line from the well to the tank. The meter is the small unit at the right, resembling the cylinder of a steam engine. The upright unit at the right is a gas trap set to release at low pressure, eliminating the gas which might come through and affect the recording. This factor, in the Skelly installation, is chiefly taken care of by a regulation gas-oil separator at the well, ahead of the meter. The well on which the tests have been conducted makes a large volume of gas.

The meter in use is the Bassler, made by the American Liquid Meter Co., Alhambra, Cal. The seven moving parts consist of a displacement piston which dispenses the liquid from the measuring chamber and operates under the influence of the liquid measured; two valves which admit and release the flow to and from the meter; a pilot valve which, with a counter shaft, activates the inlet and outlet valves as the displacement piston completes its travel in either direction; gears which link the counter shaft with the pilot valve; the recording assembly.

Special devices are supplied with the meter when desired, though these are not used on the Skelly installation. One is a thermostatic control which automatically compensates for expansion and contraction of liquid as it passes through the meter, delivering and recording the flow as of 60 degrees F. The other is an automatic sampling device which thiefs a small amount of liquid as it comes from the meter, enabling the operator to keep close watch on the amount of water with the oil.

Here are the figures in barrels on the meter's performance on the Shepherd well compared with gauge production in the tank:

Date	By Meter	By Gauge
Feb. 23	431.2	423.3
March 1	501.3	492.16
March 2	255.7	253.64
March 4	473	470.4
March 5	503.3	499.5
March 11	262	260.04
March 12	842	829.72
March 24	382	374.76*
March 28	168	167.58**

*On this date while holding a pressure of 30 pounds on the trap at the well the meter recorded 141 barrels and the gauged production was 139.92 barrels.

**Pressure on trap on March 28 was held at 35 pounds, bringing over considerably more gas which apparently was handled adequately by the small trap at the meter. Fluctuation in well's production was due to proration.

The next test to be made by the Skelly company is on a pumping well which makes considerable gas, to see whether the small trap will take care of it. The pressure on the small trap while the meter has been in use on the flowing well has been around six pounds.

* * *

The Jackass Given Mechanical Helper

The necessity for speed in getting new drilling locations started at making hole caused the Indian Territory Illuminating Oil Co. to call for me-

The Bassler liquid meter as installed on the line from a producing well

chanical help in constructing slush pits in the Oklahoma City field. This is but rarely done in the Mid-Continent fields.

The accompanying picture shows a tractor of the caterpillar type hauling a scraper with a load of earth up on the dike of the pit. In the background can be seen the boom of a clamshell bucket used for lifting loose earth. It was idle at the time the picture was snapped.

This tractor-scraper did not supplant the sturdy jackass and the horse on this particular job. The mechanized equipment was working on one dike while the old familiar "two pair" and Fresno were working on another. No records as to relative speed and costs had yet been compiled.

The scraper towed by the tractor is a cylindrical affair, about three-quarters enclosed. It is made to assume a position where its lower edge of the opening sets almost flat on the ground thus to pick up its load of loose dirt and to trip and dump its cargo all by use of a jerk line handled by the tractor driver.

Using a tractor and scraper to build wall of slush pit

* * *

The Delaware Takes Another Short Cut

Thirty pumping powers on the properties of the Delaware Consolidated Oil Corp. in the Nowata district of Oklahoma are now equipped with old steam drilling engines operated by compressed air from the big plant which repressures the properties. The steam or air outfits replaced gas engines that either had to be discarded or repaired at a high cost.

It would have required an outlay of $1000 to $1300 per power to repair the gas engines and to replace those not worth repairing. They had been in service for many years and had given a faithful account of themselves, but their end was near. The replacement with old, reconditioned steam engines at nominal cost—from $35 each up to less than $100—was started a long while back and has recently been concluded.

The cost of the steam engines was about offset by the salvage value of the gas engine. A expense of $9000 was incurred in modifying the equipment in the compressor plant to serve the steam engines with compressed air and to make the necessary line connection to the engines. It would have cost, says the management, about $35,000 total to recondition the gas engines. A saving of $24,000 is indicated. There has been a reduction in the number of pumpers from eight to five and one-half—one man being employed who spends half his time at other work on the property. The labor reduction comes about through less time being required by the pumper to turn on the air to the steam cylinders than to fuss with gas engines which have become old and temperamental.

Efficiency of the compressed air is increased by heating it to around 250 degrees F. before it enters the cylinders. For this purpose small gas-fired stoves are used near each power.

* * *

Water Tube Boiler Gets Field Trial

For the first time a water-tube type boiler has been taken into the oil fields for drilling purposes. The Hubbard Drilling Co., of Tulsa, has installed one at an Oklahoma City well. Rather, it has installed two, for the William Bros. Boiler & Manufacturing Co., Minneapolis, is supplying the boilers in pairs, each of 145 horsepower rating. They are designed for 350 pounds steam working pressure. The manufacturer's agent in Tulsa, R. E. Martin, says the boilers are guaranteed to operate continuously at 200 per cent of rating.

This type boiler is well known in refineries and natural gasoline plants but is a stranger to the fields. One feature stressed by the maker is the freedom from hazard. Drums are not exposed to high temperatures and, if a tube be ruptured, the boiler is automatically cut off the line and the pressure is released without damage to the workmen or the boiler setting. There are three drums in each boiler, connected by bent tubes. The top one is the steam drum, containing the steam and safety valve outlets and the feed water inlet. Water admitted in this drum drops through a bank of tubes to the mud drum, suspended from two banks of tubes so that it is free to move as the tubes expand or contract. Here the sediment falls out and can be blown off as desired. The third is called the submerged drum.

Water flow in the tubes is at the rate of 16 feet per second, this velocity greatly minimizing scale within the tubes. Included in the unit, which is set in brickwork—another innovation in the oil fields—are a feed water preheater, where the water is heated to 190 degrees F. and filtered, and an oil separator. It is claimed that the steam supplied to the engines and pumps is much drier from this type boiler.

The trial is attracting attention of many contractors. Mr. Martin, the southern representative of the William Bros. company, is associated in Tulsa with W. S. Smith, prominent supply man who handles the Mid-Continent business of the Miller Improved Gas Engine Co.

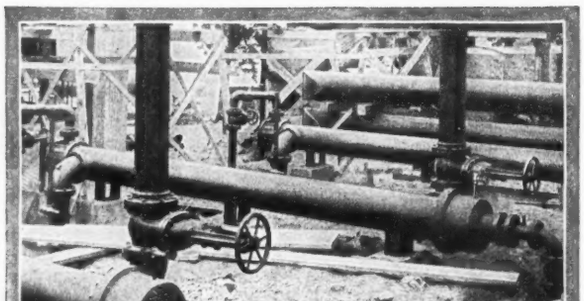
Table on Arcs, Chords and Versines

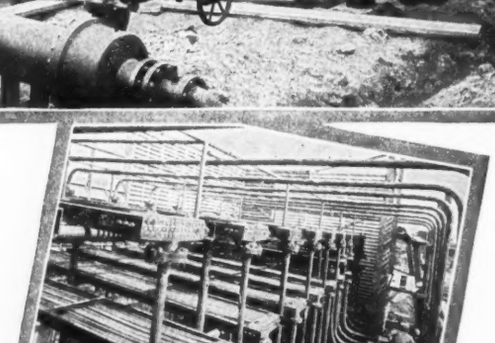
CHICAGO—A 32-page book entitled, "Table for Use in Computing Arcs, Chords and Versines," has just been published by the Chicago Bridge & Iron Works. The range of this table, which is intended for use with the squares and logarithms of Inskip and Smoley, corresponds to central angles between 0° and 60°.

Those having occasion to work with problems involving arcs, chords and versines will find that this table eliminates a large amount of tedious work. Copies may be purchased for $1 from the author, Harry Clow Boardman, C. E., by addressing him at 1305 West 105th St., Chicago.

For cooling gas — oil — water

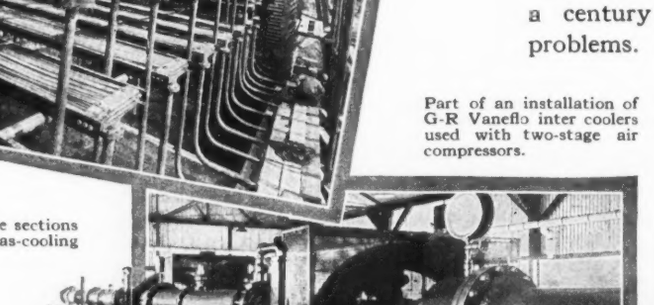
Installation of G-R Vaneflo Gas Coolers in Mid-Continent field.



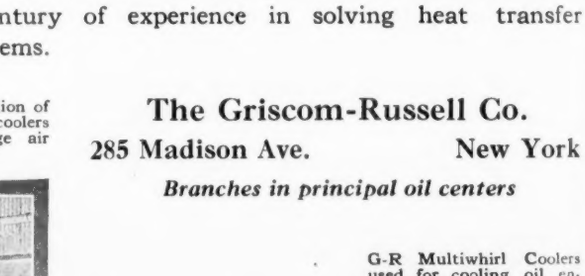


Part of an installation of G-R Vaneflo inter coolers used with two-stage air compressors.

G-R Bentube sections used on gas-cooling service.



G-R Multiwhirl Coolers used for cooling oil engine jacket water.



IN pipe line pumping stations, as in every other petroleum industry service, Griscom-Russell Coolers have met with general approval and are widely used because of their many special features that provide high rate of heat transfer, ease of installation, dependable, trouble-free operation, and economical maintenance.

No matter what may be the liquid, gas or vapor to be cooled, the capacity or cooling range desired, and the special operating conditions to be met, G-R Engineers are prepared to study your requirements without obligation and to submit authoritative recommendations on equipment exactly suited to your particular service.

Besides Vaneflo and Multiwhirl Shell-and-Tube Coolers and Bentube Atmospheric and Submerged Cooling Sections, Griscom-Russell Products for the petroleum industry also include many types of Condensers, Heat Exchangers and Heaters, the design and construction of which are based on over half a century of experience in solving heat transfer problems.

The Griscom-Russell Co.
285 Madison Ave. New York
Branches in principal oil centers

Griscom-Russell

Heat Transfer Apparatus

Modern Refining—Science and Practice

By Colonel George A. Burrell*

Article 20

The Still Furnace

Radiant heat vs. convection heating; Stephan-Boltzman Law; Calculation of heat transmission by convection; Luminous and non-luminous flame; Heat distribution in the carborundum furnace

HEAT is absorbed by convection from hot gases and by radiation from hot gases and hot surfaces. Heat is absorbed in both ways at points in the furnace where the heating surface is close to the furnace, but after the gases have been cooled to about 1100 F. or lower, and swept away from the furnace proper, only convection heating comes into play.

In some stills most of the heating is performed by convection, and in others most of it is performed by radiation. The former type of still is the oldest. Its efficiency was mainly dependent upon the weight of the gases passing over the transfer surfaces and their velocity. Tubes were shielded from the radiant heat of the gases and from hot refractories by a bridge wall or checker work.

Considerable radiant heat was absorbed by the tubes from the gases that swept over them, as much as 50 per cent perhaps, if the excess air was kept at a low figure, but convection type stills were usually operated with high stack temperatures and much excess air to keep the temperature down as much as possible.

The industry was afraid of decomposing and coking the oil and had not learned to use high velocities and good heat distribution and absorption. Recirculating flue gas systems have added much to this type of furnace, by introducing more gas and thus speeding up velocities so that gas films on the fire tubes which resist heat flow are to a considerable extent swept away. But radiant heat furnaces do not need recirculating systems, so that they are a mark of an old fashioned furnace.

Heating by means of radiant heat is the more efficient of the two means. Heat is absorbed in proportion to the fourth power of the difference between the absolute temperatures of the radiating and absorbing surfaces, and by convection directly in proportion to the temperature difference between the two substances. In heat flow by radiation, the gas films which resist heat transfer by convection, are readily pierced. The absorption by radiant heat, the Stephan-Boltzman law, is expressed thus:

$$\left[H = A,\ K + \left(\frac{T_1}{100}\right)^4 - \left(\frac{T_2}{100}\right)^4 \right]$$

where,

H = B.t.u.'s radiated by A (square feet) having temperature T_1 (abs. °F.) in time t (hours) to a surrounding envelope having temperature T_2 (abs. °F.). The coefficient K has a value of 0.162 for black body conditions, which is the condition existing in most furnace interiors. Outside where the radiation is not reflected upon itself, K varies from 0.05 for smooth surfaces to 0.157 for very rough surfaces.

Radiation rapidly increases with temperature. For instance, Trinks, in his book on heating furnaces, finds that at a radiating surface temperature of 1000 F., with a temperature difference of 200 degrees, between the radiating surface and the furnace walls to be heated, the B.t.u. absorbed per square foot per hour (radiation only) is about 3000, while at a temperature of 2200 F. and the same temperature difference, it is about 20,000 B.t.u.'s.

Heat transmission by convection is expressed by the equation:

$$H = A\ (K' + qK''C)\ (T_1 - T_2)$$

where, a gas of temperature T_1 (°F.) and of density q (lbs. per cu. ft.) passes over an area A (sq. ft.) with a velocity C (ft. per sec.) and transmits H (B.t.u. per hr.) to that area. The coefficients K′ and K′′ represent respectively heat transmission by diffusion and by turbulence. K′ varies between 1.5 and 2.5, and K′′ between 2.25 and 4.25.

Making the same comparison in the case of heat transfer by convection, as by radiation, Trinks finds that with a temperature difference of 200 degrees F., between gases and furnace wall, a temperature of the gases of 1000 F. and a velocity of 15 feet per second, that about 550 B.t.u. per square foot per hour are absorbed. At 2200 F. this becomes about 600 B.t.u. In other words, at 1000 F. about six times as much heat is absorbed by radiation as by convection and at 2200 F. about 30 times as much.

Formerly it was thought by many that a non-luminous (blue) flame was ideal for furnace settings. But today much more attention is paid to yellow flames and radiation from them and from hot refractories. Haslam[1] quotes Von Helmholtz as finding that radiation from luminous flames to be 20 to 120 per cent greater than from non luminous flames.

Haslam and Boyer[2] showed radiation from a truly luminous flame to be 25 to 30 per cent of the total heat of combustion of the gas, and that in passing from a non-luminous to a luminous flame the rate of heat transfer by radiation is increased fourfold.

They recognize two components in radiation from flames; one is due to vibrations set up by the electronic rearrangement of molecules during combustion, and the other which is only associated with luminous flames,

*Consulting Chemical Engineer, Pittsburgh, Pa.

[1]Fuels and Their Combustion. Haslam and Russell, 1926, p.280.

[2]Ind. & Eng. Chem., Jan. 1927, p.4.

is due to the presence of incandescent particles of carbon.

In actual practice, however, it is seldom that a strictly luminous flame is obtained, as this would produce what is called a dirty flame. Semi-luminous flames are usually maintained. Even with these flames one-half of the total heat may be obtained by radiation.

Radiant heat in shell stills is used to the best advantage from large wall surfaces and in tube stills by arranging some of the tubes so that most of the heat is radiant heat from the furnace walls, while a small part of the remainder is absorbed by convection in another bank of tubes placed back of the bridge wall.

As tube stills are built today the heat transfer in some of them, by radiation, is figured at about 15,000 B.t.u. per square foot per hour, although in some sections of a furnace this may reach 30,000 B.t.u. or higher. It falls to a low figure in other sections.

Different equipment companies or builders of cracking units, build different types of furnaces. The Alcorn furnace utilizes carborundum (silicon carbide). This refractory is porous or transparent to radiant heat, has high heat conductivity and is resistant to decomposition at high temperatures.

Fuel is burned within the carborundum walls, or shield, and does not impinge on the heating surface. About 50 per cent of the heat is generated as radiant heat and passes through the carborundum walls to the tubes. Gases leaving the carborundum shield are next brought into contact with the tubes where convection heating largely comes into play.

Nash[3] gives the following heat distribution in one type of Alcorn furnace, assuming that 30,000,000 B.t.u. are generated.

	B.t.u.
24 radiant tubes; 672 sq. ft. @ 20,000 B.t.u. per sq. ft. (radiant heat)	13,440,000
20 secondary radiant tubes; 560 sq. ft. @ 10,000 B.t.u. per sq. ft. (chiefly radiant)	5,600,000
14 combination tubes, 392 sq. ft. @ 5000 B.t.u. per sq. ft. (chiefly convection)	1,960,000
20 convection tubes, 560 sq. ft. @ 5000 B.t.u. per sq. ft. (convection only)	2,800,000
Total	23,800,000

The writer would say that the foregoing only represents a rough estimate of the heat distribution. It is difficult to arrive at an accurate presentation. Furthermore, Alcorn furnaces, like all other tube stills, have undergone rapid development in the past year. All sorts of arrangements of radiant and convection sections have been tried. The best distribution of heat is a difficult problem. Cracking stills are given to higher temperatures all the time.

The writer is aware of one well known make of furnace that went into operation under a cracking still during the past summer in which the tube banks had to be rearranged after the furnace was tried out to get the best heat distribution for the oil capacity desired, and to prevent coking up of the tubes too soon. Like practically all other refinery equipment, or other equipment for that matter, the "cut and try" method has been the method largely used in the development work.

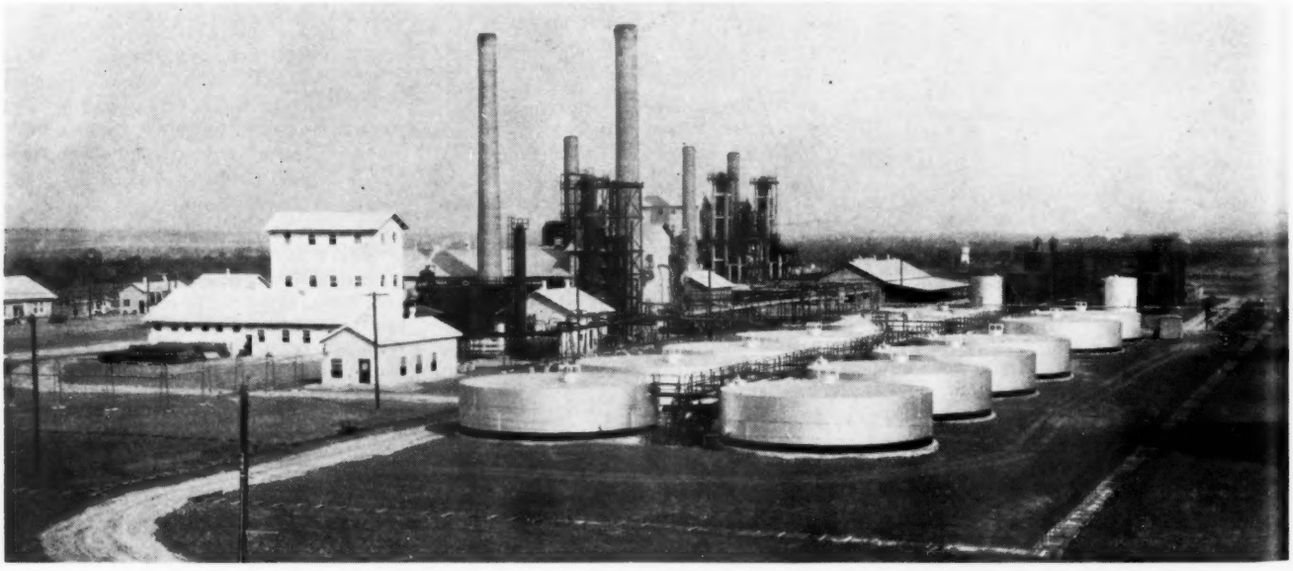
As already stated, various combinations and arrangements of tube banks are used in tube still furnaces. In one type of furnace the fuel is burned in a large combustion chamber separated from the tube chamber by a wall running the whole length and height of the still. The fresh products of combustion, generated by the burners, usually located in the end walls of the combustion chamber, are mixed with recirculated gases and the mixture enters the tube chamber through a checker work in the top of the separating wall. Except for radiation from the brickwork above the tube bank, the tube surfaces are protected from the radiant heat and most of the heat input into the oil is by convection from the gases passing over the tubes.

A typical radiant heat still has roof tubes that act as heat absorbing surfaces of the radiant heat from the flame and the brickwork in the combustion chamber. The convection section, usually the first path of the oil through the still, draws off part of the remaining heat of the products of combustion and reduces their temperature to 200 to 300 F., above the temperature of the incoming oil. An air preheater in the stack reduces the flue gas heat losses.

As already stated, not so long ago most combustion engineers concentrated on blue flames for furnaces. The advantage of radiant heat was not generally understood. Of course a blue flame, given enough heat transfer surface, will give good results, but in the use of a radiant flame, not nearly as much transfer surface is needed, as already shown, so that engineers now utilize it as much as possible, thereby keeping tube surface down, but still providing enough of same and enough furnace area, to finally completely burn up the fuel and absorb residual heat by convection.

It would make one dizzy to attempt to follow all the developments in furnace construction during the past few years. What was current practice in some equipment one year ago is obsolete today, or may be out of date next month. It is believed, however, that it can be safely said that improvements in tube stills and the use

[3]Am. Inst. Mg. & Met. Engrs., Feb. 1928.



View of The Texas Co. refinery at San Antonio, Texas

Reproduced from Painting by Ebihara

It is much safer to ride one horse than to attempt to straddle two or more at the same time

Riding on one license contract for the operation of the Dubbs Process is safe and sure

Look out for a spill if you attempt a stunt with one foot on each of two contracts at the same time, with another one or two in the middle

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

of good columns has done more to advance refinery practice in recent years than any other pieces of equipment.

A furnace representing a late development in radiant heat utilization is the deFlorez still where the fire tubes are placed around the inner wall of a cylindrical housing so that all of the tubes receive an equal or nearly equal amount of radiation, some of them not being shielded by others, as in the ordinary tube bank. The deFlorez furnace followed the same idea in a pulverized coal furnace built by the Combustion Engineering Co. of New York City.

It is going to be interesting to follow the development of direct heated oil cracking stills. Here an inert gas (residue gas) is heated in a hot blast stove and then brought directly into contact with oil vapor to be cracked. Theoretically some advantages accrue to this type of heating.

New Refining Patents

Wax Separation. U. S. P. 1,750,646, March 18, 1930, Earl Petty, Assignor to De Laval Separator Co.

THE essence of this invention is the production of high-grade light-colored oils and of oil-free crystalline paraffin wax, without the necessity of a final distillation to clarify the oils.

The procedure by which this is accomplished differs from prevailing practice in these respects: the separation into light, medium and heavy fractions is effected during the distillation of the crude oil, the three fractions are treated separately for dewaxing and decolorizing, in presence of the petroleum thinner; and there is no final distillation other than that required to remove the thinner.

The major features of the treatment of the light, medium and heavy oils are dilution with a light petroleum distillate; acid treatment and removal from acid sludge; agitation with alkali; centrifuging to break the resulting emulsion; chilling and centrifugal dewaxing; clarification with a cecolorizing clay, and distillation to remove the diluent.

In the centrifugal dewaxing operation, thorough separation of oil and wax is attained with the aid of another invention (patent not yet granted) in which the outlet spouts for wax are steam-jacketed to keep the wax free-flowing and prevent clogging. The wax is obtained in an oil-free crystalline state and can be further processed as desired.

One of the principal advantages of the new process is stated to be elimination of the customary final distillation, which always impairs the color of the product. Other advantages are that the process can be carried on continuously and expeditiously, and that it involves the handling of only relatively small quantities of stock at one time, so that capital investment for plant and equipment need not be so large as in the case of other methods.

Cracking Oils. U. S. P. 1,751,148, March 18, 1930, Wm. S. Hadaway, Jr., Assignor to The Texas Co.

THE problem of carbon deposition in oil-cracking apparatus is responsible for this, as for numerous other inventions. The contribution which is disclosed in this patent relates to a novel means of ascertaining and controlling the course of the cracking operation, so as to minimize carbon formation and prevent damage to the apparatus.

This is accomplished by taking advantage of the electrical properties of free carbon, which are such as to alter the dielectric behavior of oil containing free carbon. Thus, by measuring the dielectric properties of the oil in a cracking unit the amount of free carbon in the oil can be ascertained and interpreted as an indication of the course of the cracking. Proper interpretation of the observed dielectric properties requires comparison with those of the fresh oil; therefore provision is made for measurements before and during the heating of the oil.

To carry out the invention, the cracking units are equipped with pairs of electrodes, suitably located, and connected to the secondary leads of a high tension transformer. The power loss between the electrodes is dependent on the free carbon content of the oil. Each pair of electrodes is connected to an indicating instrument. In a battery of cracking units, as many of these instruments may be provided as are needed to give the required information.

In the practical use of the invention, trials are made with each installation, to ascertain the upper permissible limit of free carbon content. These limits vary according to the particular apparatus employed for cracking.

Improved control carries with it its useful advantages of greater yield and better quality of product; in this case there is also the added benefit of prolonging the life of the apparatus.

Book on Balancing Of Oil Engines

That the faster and more compact internal combustion engines increasingly used in marine service particularly, will suffer considerably from the effects of unbalance unless proper attention is given the balancing problem, is told in "The Balancing of Oil Engines," a new book by W. Ker Wilson, B. Sc., London. It is published by J. B. Lippincott Co., Philadelphia, and sells for $10 per copy.

The book endeavors to give a concise and clear account of the principles and practice of balancing which, it says, is dependent upon something more than the ability to solve mathematical equations.

The first chapter discusses fundamental principles such as vibration, critical speeds, forces acting on the engine frame, fluid pressure, maximum and mean torque, inertia forces and other factors tending to produce unbalance.

Balance tabulation for four and six-cylinder engines is discussed in two chapters, which tell of the factors for the calculation of unbalanced vertical and horizontal couples, the effect of crank sequence, unbalanced forces and couples for a standard range of engines, and other pertinent information.

The rest of the book devotes a chapter each to engines of a single cylinder up to eight cylinders, to be graphical methods applied to balancing problems, the general problem of engine balance and to a discussion of engine foundations.

U. S. Court Sustains Missouri "Gas" Tax

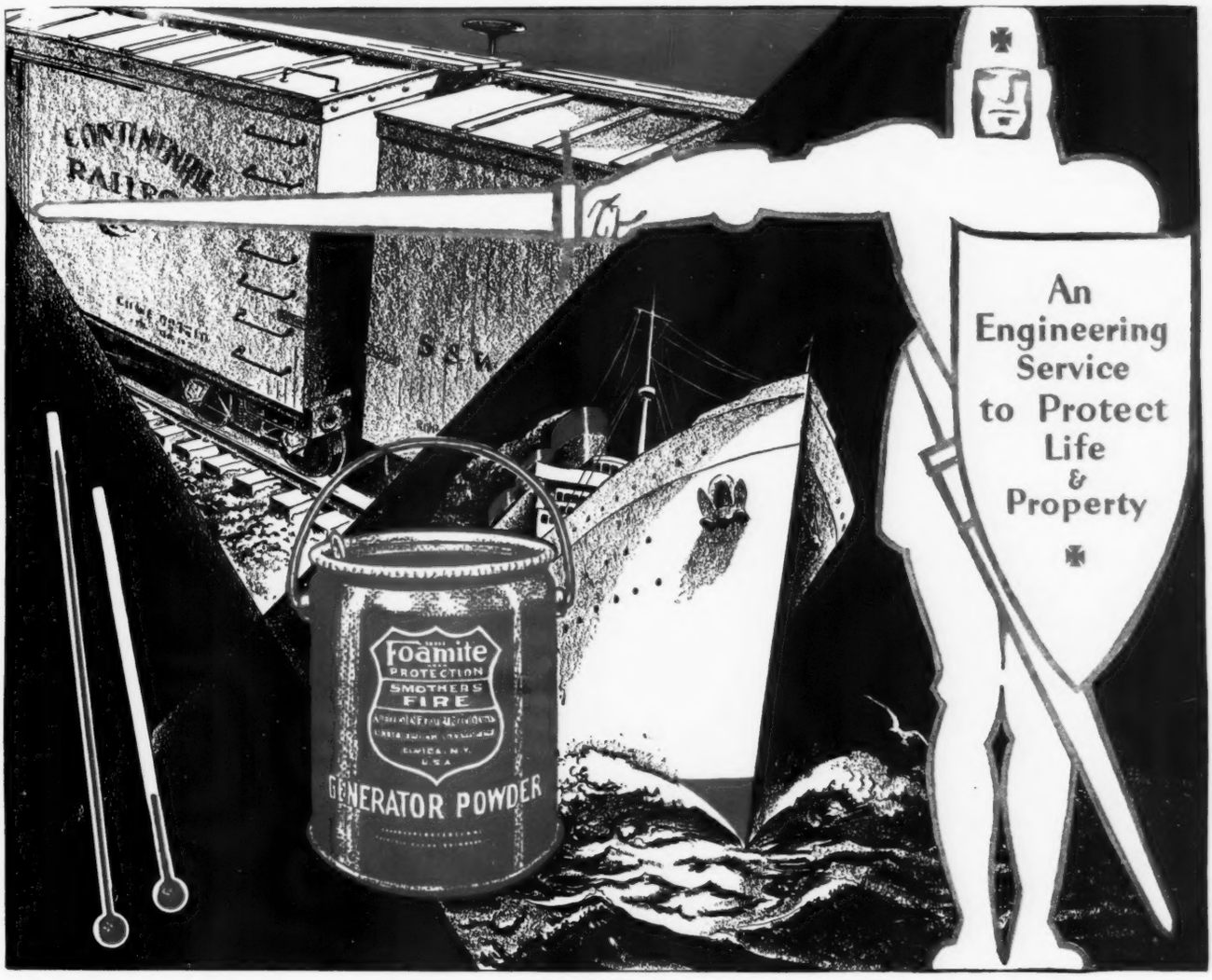
CLEVELAND, April 18.—A federal court, with three judges sitting in St. Louis has upheld the constitutionality of the Missouri 2-cent gasoline tax law which was attacked by a trucking company engaged in interstate commerce.

The trucking company, hauling from St. Louis to East St. Louis, Ill., contended that levying of the tax by Missouri on gasoline used in its hauling was an interference with commerce between points in Missouri and Illinois.

The court said in dismissing the action: "We know of no case which holds that a state may not put an excise tax on a commodity of trade or commerce when such commodity has finally come to rest in that state and this is so, even though the purchaser may intend to use and does use the commodity in interstate commerce."

Paraffin wax exports from the United States in 1928 to Finland totaled 1,206,000 pounds, compared with Germany's exports of 187,000 pounds, which ranked second highest.

FIRE — AN INCIDENT OR A DISASTER ?



Jarred and jolted for 9000 miles —yet *unharmed!*

To test FOAMITE Generator Powder, and its standard moisture proof containers, we sent it almost half way around the world. Across the continent, by freight, over bumpy rails. Tossed in a ship's hold on a trip through the tropics. Then back in a freight car, to our factory.

We "gave it the works" to find out how much grief it would stand —and still be ready for instant use. The powder in its standard containers encountered all sorts of rough handling, temperature variations, and moisture conditions.

At the end of the trip, tests proved the powder exactly as good, in every respect, as the day it first left our factory.

Simplicity! Reliability! A single powder in a single pail that you can depend on to do the job when you want it to. That's why FOAMITE Generator Powder is so generally used in oil producing and refining properties today.

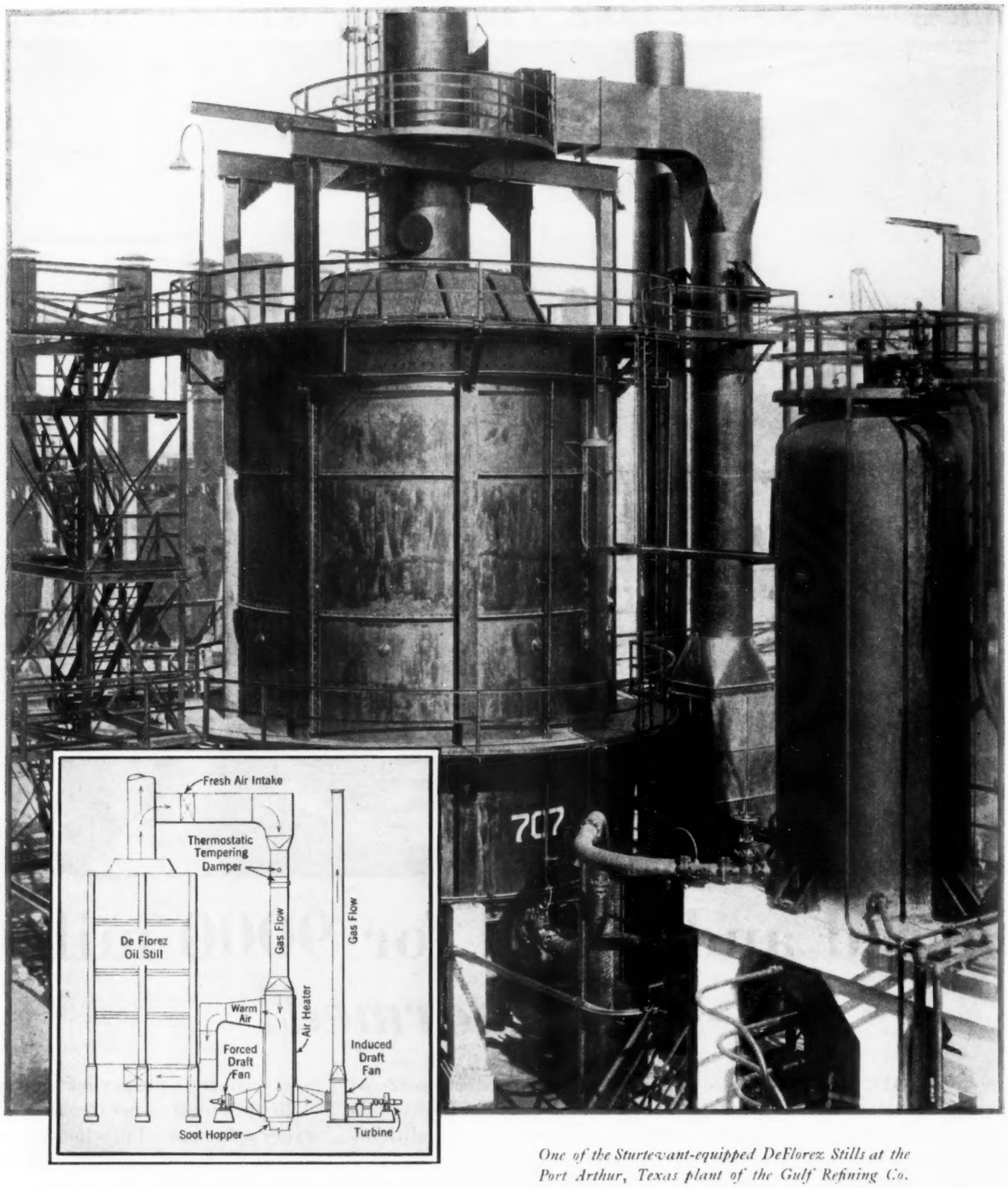
Representatives are located near every principal oil producing and refining center. They will gladly give you information on all FOAMITE equipment. Write

AMERICAN-LA FRANCE AND FOAMITE CORPORATION, DEPT. E 40, ELMIRA, N. Y.

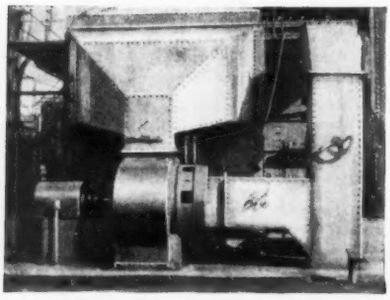
LA FRANCE AND FOAMITE PROTECTION

AN ENGINEERING SERVICE

AGAINST FIRE

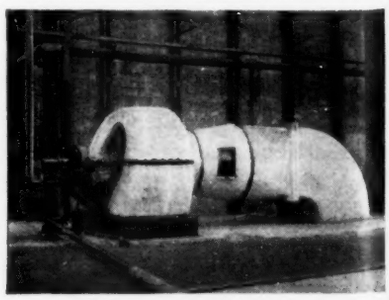


One of the Sturtevant-equipped DeFlorez Stills at the Port Arthur, Texas plant of the Gulf Refining Co.



1 ***Sturtevant High Temperature Recirculating Fan***

2 ***Sturtevant Air Preheater***



3 ***Sturtevant High Pressure Propeller Fan***

STURTEVANT
Air Preheating Equipment
on De Florez Stills

Saves fuel and improves combustion

The De Florez still shown — equipped with Sturtevant Apparatus for preheating combustion air with flue gases — is part of a unique and successful installation made for the Gulf Refining Co. Each of eight stills is equipped with a Sturtevant Air Preheater and Sturtevant Induced and Forced Draft Fans. The fans are driven by Sturtevant Steam Turbines.

Through the use of this Sturtevant equipment, illustrated by the drawing, part of the flue gases are diverted and drawn through a standard plate-type air preheater, constructed of ordinary steel. The temperature of the incoming flue gases is limited by Sturtevant thermostatic control which allows the influx of sufficient cold air to maintain this temperature at a constant and safe maximum. Thus it is possible to utilize an air preheater of ordinary metal as a substitute for an oil preheating section, since the added heat recovered and returned to the furnace through the preheated air for combustion is roughly equivalent to the heat which might be saved by the usual tubular economizer. This arrangement eliminates the necessity of special alloys, since the exit gases, at a temperature of about 1400 degrees, can be reduced to approximately 900 degrees, which is sufficient to provide ample preheat for efficient combustion.

Air for combustion is supplied by the forced draft fan. As this air passes through the chambers of the preheater it picks up the heat from the gases and then is led to the gas burner.

Any of our offices below would welcome your request for further information regarding Sturtevant Oil Refinery Equipment. We will gladly send you complete data and can refer you to installations now in operation. If you so desire, one of our engineers will gladly call on you.

Sturtevant Equipment for Oil Refineries

1. High temperature flue gas recirculating fans, propeller and centrifugal types.
2. Air preheaters—plate or tubular. We also design special heaters of alloy steel for high temperatures.
3. High pressure propeller fans for forced draft to oil and gas burners.
4. Turbines, motors and engines for fans or pumps.
5. Economizers for preheating oil or water.
6. Heavy duty draft fans for boiler houses.

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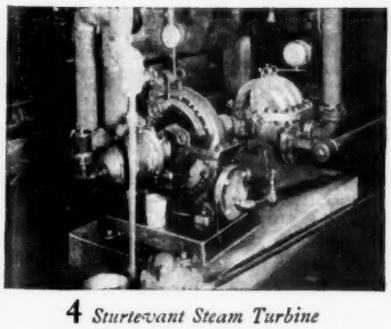
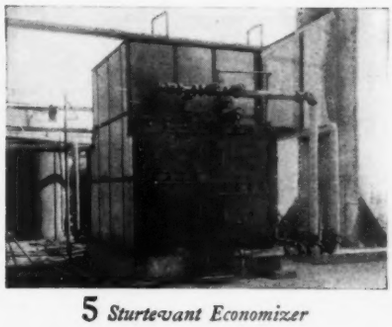
Sturtevant

REG. U.S. PAT. OFF.

OIL REFINERY EQUIPMENT



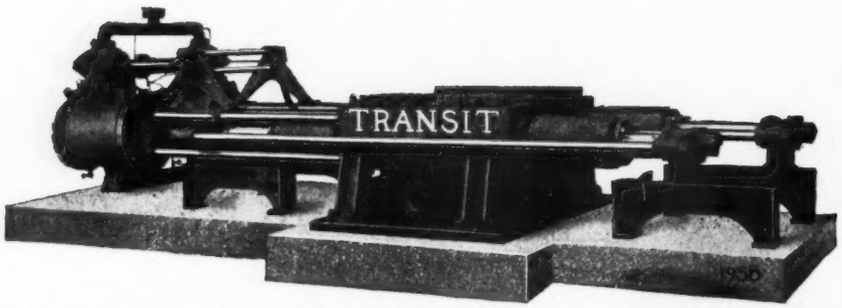
4 *Sturtevant Steam Turbine*



5 *Sturtevant Economizer*

6 *Sturtevant Draft Fan for boiler house use*

Order TRANSIT HOT OIL PUMPS Now



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Last Winter we worked day and night to keep up with the orders for TRANSIT Hot Oil PUMPS, but even then some good refiners had to content themselves with other makes of hot oil pumps.

Descriptions of TRANSIT Hot Oil PUMPS on request.

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WILL
Increase your gasoline yields,
Improve your gasoline quality,
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Reduce your refining costs.

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NEWARK, NEW JERSEY

New Patents

Prepared by R. E. Burnham, patent and trade-mark attorney, 1343 H Street, N. W., Washington, D. C., from whom copies may be obtained at the rate of 20c each. State number of patent and name of inventor when ordering.

March 18, 1930

REFINING

Process of purifying wax distillates—Earl Petty, Winfield, Kans., assignor to De Laval Separator Co., New York, N. Y. Filed Aug. 24, 1921. No. 1,750,646.

Apparatus for cracking oils—William S. Hadaway, Jr., New Rochelle, N. Y., assignor to Texas Co., New York, N. Y. Filed Aug. 28, 1925. No. 1,751,148.

Art of continuous distillation of heavy hydrocarbon oils—Robert E. Wilson, Chicago, Ill., assignor to Standard Oil Co. of Indiana. Filed Apr. 3, 1925. No. 1,751,182.

PRODUCTION

Expansible underreamer—Roland R. Crum, Whittier, Cal., assignor to H. C. Smith Mfg. Co., same place. Filed Oct. 15, 1928. No. 1,750,627.

Expansible underreamer—Roland R. Crum, Whittier, Cal., assignor to H. C. Smith Mfg. Co., same place. Filed Oct. 15, 1928. No, 1,750,628.

Expansible underreamer—Roland R. Crum, Whittier, Cal., assignor to H. C. Smith Mfg. Co., same place. Filed Oct. 15, 1928. No, 1,750,629.

Well-tool grab—George A. Robison, Bakersfield, Cal. Filed Apr. 30, 1928. No. 1,750,728.

Rotary core-bit—Maurice S. Chamberlain, Malvern, Ark. Filed Sept. 22, 1926. No. 1,750,744.

Pipe-handling apparatus for derricks—Columbus N. Gidley, Corsicana, Tex. Filed Apr. 28, 1928. No. 1,750,798.

Well-drilling apparatus—George R. Watson, Waterloo, Iowa, assignor to Armstrong Mfg. Co., same place. Filed Nov. 9, 1928. No. 1,750,826.

Sucker-rod guide—Earl C. Meier, Wichita, Kans., assignor to Production Equipment Co., same place. Filed Jan. 8, 1928. No. 1,750,851.

Well-screen—Elihu C. Wilson, Los Angeles, Cal. Filed May 12, 1925. No. 1,750,871.

Automatic oiling system for deep-well turbine-pumps—Roy M. Magnuson, Stockton, Cal., assignor to Sterling Pump Works, same place. Filed Feb. 14, 1927. No. 1,750,898.

Slip-socket—Ernest J. Shaffer, Tulsa, Okla. Filed Nov. 29, 1920. No. 1,750,906.

Shock-absorber for oil-well pump-rods—Frank C. Baker, McCamey, Tex. Filed Oct. 5, 1928. No. 1,750,917.

Rotary reamer—Alexander Boynton, San Antonio, Tex. Filed Apr. 17, 1925. No. 1,750,953.

Well-drilling apparatus—Clyde S. Wright, Toledo, Ohio, assignor to National Supply Co., same place. Filed May 27, 1927. No. 1,750,982.

Oil and gas separator—James R. Sullivan, Taft, Cal. Filed Nov. 30, 1928. No. 1,751,017.

Oil-well delivery apparatus—Theodore J. Miller, El Campo, Tex. Filed Mar. 24, 1927. No. 1,751,347.

Tubular (well-drilling) derrick—John J. Mitchell, Petersburg, Va. Filed Feb. 9, 1924. No. 1,751,348.

MISCELLANEOUS

Coupling—Leland S. Bessonett, San Francisco, Cal., assignor to Standard Oil Co. of California. Filed Mar. 23, 1925. No. 1,750,790.

Automatic liquid-fuel dispenser—Charles Brahy, Brooklyn, N. Y. Filed Mar. 28, 1928. No. 1,751,073.

March 25, 1930

REFINING

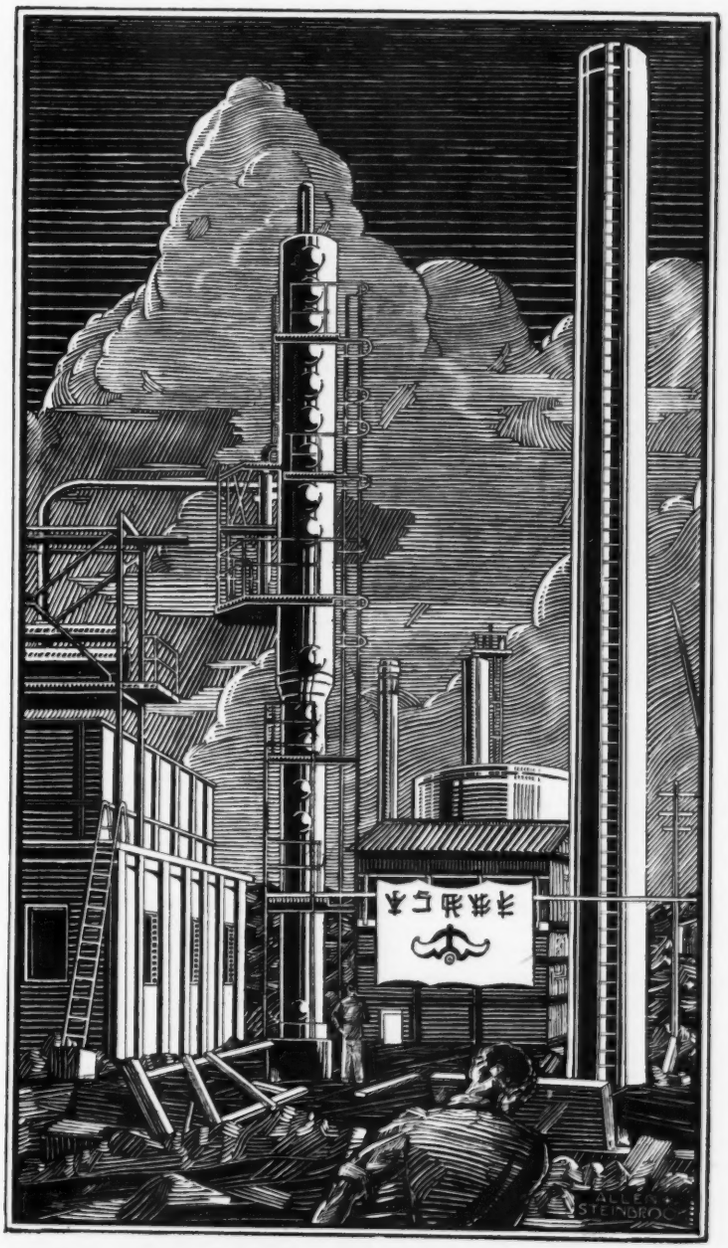
Apparatus for salvaging used cleaners' gasoline.—Walter S. Bayliss, Los Angeles, Cal., assignor to Filtrol Co. of California. Filed Dec. 21, 1925. No. 1,751,613.

Apparatus for treating hydrocarbons.—Gustav Egloff and Harry P. Benner, Chicago, Ill., assignors to Universal Oil Products Co., same place. Filed Sept. 1, 1920. No. 1,751,729.

Apparatus for cracking oil.—Gustav Egloff and Harry P. Benner, Chicago, assignors to Universal Oil Products Co., same place. Filed Feb. 11, 1921. No. 1,751,730.

Process of treating hydrocarbon oil.—Gustav Egloff, Chicago, Ill., assignor to Universal Oil Products Co., same place. Filed Oct. 22, 1923. No. 1,751,731.

Process and apparatus for treating and purifying hydrocarbon oils.—Lyman C. Huff, Chi-



International

THE above pressed distillate re-run unit has just been completed for the Nippon Oil Company. It was designed for unusual flexibility and capacity as well as for wide variation in charging stock. Let Smith Engineers cooperate with you on your refining problems. Their activities cover every phase of refinery design and construction.

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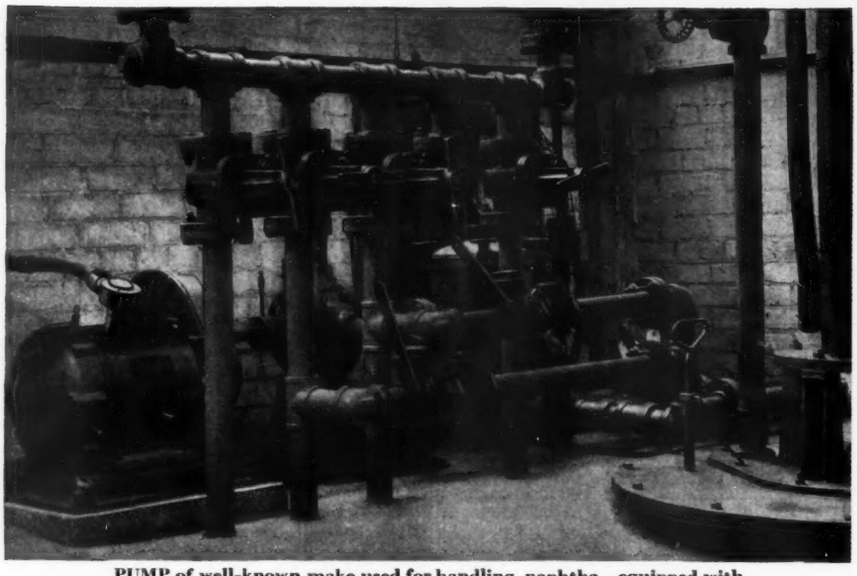
"SAFETY FIRST" In Pumping Naphtha!



PUMP of well-known make used for handling naphtha, equipped with Louis Allis "Explosion-Proof" motor which is approved by Underwriters for naphtha, gasoline, and other specific explosive atmospheres.

"SAFETY first" was the rule in selecting the drive for the naphtha pump here shown. Consequently the designing engineer rejected every drive that might create a spark and ignite the surrounding flammable vapors.

This eliminated belt drive because of sparks that might result from belt static. And *ordinary* electric motors were out of the question because of possible sparks from grounds, burnouts and short circuits.

The Louis Allis "Explosion-Proof" or Type E motor was selected because its safety under these conditions is approved by definite and severe tests made by Underwriters' Laboratories.

Make "Safety First" the rule in *your* plants. Standardize on L.A. "Explosion-Proof" motors for operation wherever naphtha, benzol, gasoline, and equally hazardous liquids are made, used, or handled.

Write for full information.

WARNING *Do not confuse Louis Allis "EXPLOSION-PROOF" Motor with so-called "vapor-proof" motors. Real "EXPLOSION-PROOF" motors must be specially constructed, and must pass severe explosion tests, to be approved by Underwriters' Laboratories for use in explosive atmospheres.*

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T. L. Genter, Concessionaire.

cago, Ill., assignor to Universal Oil Products Co., same place. Filed Nov. 15, 1923. No. 1,751,862.

Oil-cracking process.—John B. Jaqua, Alhambra, Cal. Filed Nov. 26, 1926. No. 1,752,004.

Process of reclaiming oil.—David C. Cox, Pittsfield, Mass., assignor to General Electric Co. Filed March 18, 1925. No. 1,752,238.

Manufacture of high-compression automotive distillate.—Clifton J. Pratt, St. Louis, Mo. Filed July 13, 1927. No. 1,752,264.

PRODUCTION

Apparatus for determining deviation of oil wells from the vertical.—Harry J. Morgan, Walnut Park, Cal. Filed June 15, 1929. No. 1,751,594.

Deep-well pressure-recorder.—John N. Hicks, Los Angeles, Cal. Filed June 29, 1927. No. 1,751,632.

Rotary core-drill attachment.—Arthur L. Armentrout and Elwin B. Hall, Los Angeles, Cal. Filed Feb. 25, 1926. No. 1,751,678.

Pumping apparatus.—John B. Sperry, Aurora, Ill., assignor to American Well Works, same place. Filed June 15, 1925. No. 1,751,767.

Well-tool.—Alvis F. Brown, Whittier, Cal., assignor to Brash-Ross Tool Co., Los Angeles, Cal. Filed Dec. 17, 1927. No. 1,751,789.

Jar-down spear.—Alvis F. Brown, Whitter, Cal., assignor to Baash-Ross Tool Co., Los Angeles, Cal. Filed Dec. 17, 1927. No. 1,751,790.

Pump-barrel.—Edgar E. Greve, Bellevue, Pa. Filed March 28, 1928. No. 1,751,914.

Jar-rein socket.—Frank J. Hinderliter, Tulsa, Okla. Filed Oct. 19, 1927. No. 1,751,997.

Combination tap and die fishing-tool.—Frank J. Hinderliter, Tulsa, Okla. Filed Oct. 22, 1928. No. 1,751,998.

Long-stroke pumping-jack.—Lawrence G. Burt, Tulsa, Okla. Filed April 16, 1928. No. 1,752,144.

Rod or tubing guide.—Stephen V. Dillon, Tulsa, Okla., assignor to Smith Separator Co. Filed Dec. 1, 1927. No. 1,752,154.

Oil and gas separator.—Millard F. Waters, Tulsa, Okla., assignor to Smith Separator Co., same place. Filed April 9, 1928. No. 1,752,215.

MISCELLANEOUS

Gasoline-dispensing pump.—Waldo F. Perez, Jacksonville, Fla. Filed Aug. 16, 1928. No. 1,751,880.

Catalyst for the production of ethylene glycols and ethylene hydrocarbons.—Alexander T. Maximoff, New York, N. Y., assignor to Naugatuck Chemical Co., Naugatuck, Conn. Filed May 18, 1926. No. 1.752,016.

Air-Service station.—Joe C. Woodford, Bryan, Ohio, assignor to Service Station Equipment Co., same place. Filed July 5, 1927. No. 1,752,048.

Liquid-dispensing apparatus.—John B. Davis, Springfield, Mass., assignor to Gilbert & Barker Mfg. Co., West Springfield, Mass. Filed Feb. 16, 1929. No. 1,752,068.

Coin-controlled liquid-dispensing apparatus.—Ernest C. Cooper, St. Stephens, Ala. Filed Aug. 17, 1927. No. 1,752,150.

April 2, 1930

REFINING

Clean-out elbow for cracking-stills, etc.—Fred C. Fantz, Webster Groves, Mo. Filed Apr. 12, 1929. No. 1,752,332.

Apparatus for the lye treatment of petroleum oils—Charles K. Parker, Richmond, Cal., assignor to Standard Oil Co. of California. Filed July 12, 1926. No. 1,752,350.

Refining system—Albert G. Peterkin, Jr., Bryn Mawr, Pa., assignor to Atlantic Refining Co., Philadelphia, Pa. Filed Apr. 8, 1926. No. 1,752,455.

Process of continuously hydrolyzing acid sludge—Ralph A. Halloran, Berkeley, William N. Davis, Oakland, and George A. Davidson, Berkeley, Cal., assignors to Standard Oil Co. of California. Filed Nov. 15, 1926. No. 1,752,555.

Process for the production of gas and aromatic hydrocarbon oils—Alexander S. Ramage, Detroit, Mich., assignor to Ozonide Corporation. Filed Dec. 23, 1925. No. 1,752,692.

Gasoline-filtering system and apparatus—Berry V. Stoll, Louisville, Ky., assignor to Stoll Oil Refining Co., same place. Filed Mar. 14, 1929. No. 1,752,709.

Method of preparing adsorbent materials—Harold E. Bierce, Los Angeles, Cal. Filed May 9, 1928. No. 1,752,721.

Distillation of hydrocarbons—Henry H. Hewetson, Elizabeth, N. J., assignor to Standard Oil Development Co., New York, N. Y. Filed June 25, 1923. No. 1,753,149.

Method of treating oils with finely-divided solid materials—Nathaniel E. Loomis, Westfield, N. J., assignor to Standard Oil Development Co. Filed June 12, 1928. No. 1,753,171.

PRODUCTION

Core drill and bit—William I. McLaughlin, San Francisco, Cal., assignor to Standard Oil Co. of California. Filed July 28, 1926. No. 1,752,388.

ADVERTISING PAGES REMOVED

Trains THUNDER by ... but the foot valve stays tight

A FAST TRAIN ... thousands of tons in full momentum ... clips off the miles. A truck, loaded to capacity, lumbers over the highway. Nearby, beneath a filling station, the earth vibrates in the throes of a man-made earthquake.

It is conditions like these that "make or break" a gasoline foot valve. If the valve leaks, it means a pump shut-down and probably a costly excavation for valve repair or replacement. But such conditions *make* a Jenkins Foot Valve. They prove its enduring stamina and sound economy.

The Jenkins Gasoline Foot Valve has proven drop-tight under the worst conditions of vibration to be found. Tests have demonstrated that it is the foot valve, too, which saves you "digging dollars." A Jenkins Foot Valve, installed for pumping test in gasoline, has been opened and closed nearly a million times with no sign of wear on the disc or seat which remain absolutely drop-tight. This test far exceeds ten years of average filling station service.

The Jenkins Gasoline Foot Valve is the valve that adequately fills the long-felt need for a foot valve that can be installed with confidence. The coupon will bring you an illustrated folder giving full particulars. Jenkins Bros., 80 White Street, New York. Boston, Philadelphia, Chicago. Jenkins Bros., Ltd., Montreal, London.

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Please send folder giving details of the new Jenkins Gasoline Foot Valve.

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JENKINS VALVES — SINCE 1864

proof FOOT VALVE

Plant Operators Are Told a Few Things To Watch in Distillation

By John Power
N. P. N. STAFF WRITER

TULSA, April 15

GETTING the field men of the natural gasoline departments together at regular intervals to let them discuss their operating problems, and to hear some of the more technical aspects of the work they do explained to them by engineers and chemists of the company has been found to be good practice by more than one company operating natural gasoline plants.

At one such meeting held recently in the Mid-Continent papers on such points as the chemistry involved in producing natural gasoline, distillation practice, pump packing, gas losses and heat balance were discussed. Some of the papers read on these subjects were prepared and discussed by the field men themselves, while others were handled by men from the head offices of the company.

In explaining the processes of distillation for the men in the field who may not have access to technical books on the subject, it was said that in order to effect the complete removal of the gasoline hydrocarbons from the mineral seal oil there must exist in the evaporator a temperature corresponding to the boiling point of the hydrocarbons at the evaporator pressure.

Ordinarily this would require a temperature of approximately 530 F. at 30 pounds pressure. But with the introduction of live steam into the evaporator, the vapor pressure of the mixture—being the sum of the partial pressures of the gasoline vapor and the water vapor at that temperature—is equal to the evaporator pressure. Therefore, it was stated, the hydrocarbons will vaporize at a temperature below their boiling point, at 30 pounds pressure.

This temperature of vaporization depends on the ratio of water vapor to gasoline vapor and the composition of the gasoline vapor. It can be expressed mathematically when the composition of the gasoline vapor and the evaporator operating conditions are known.

To get the same degree of stripping efficiency it is necessary to have a higher temperature to strip lean gas than for rich gas. This is partly due to the fact that the compression and cooling of the gas prior to the absorption results in the condensation of a portion of the heavier fractions at the accumulator tank.

These are the fractions that are most difficult to distill from the oil due to their high boiling point. They should never be allowed to enter the evaporation tank if it is at all possible to dispose of them in any other way. Due to the composition of the rich gas a higher percentage of these heavier fractions are usually condensed in the accumulator, the men were told.

The practice of using a gate valve on the steam inlet line, with a string to indicate the degree of opening is unsatisfactory, it was stated. Not only do these valves have a tendency to coke up, but each individual operator has his own ideas as to how much they should be opened.

The use of steam in the evaporator is to cause the vaporization of the gasoline hydrocarbons at as low a temperature as possible. An efficient still, operating under a definite pressure, temperature and ratio of live stream input will always produce a given constant vapor pressure of lean oil measured at the still outlet, irrespective of the composition of the oil entering. It would seem, it was said, that a more positive method of determining the volume of live steam being used in the evaporator should be devised.

In checking a unit trouble was being experienced in the stripping of the oil it has been found that the clapper on the steam line valve was entirely separated from the valve stem. Consequently no steam was being admitted to the evaporator. Monthly checks on the plants locate such conditions, but, it was asked, who wants to run a unit a month without any steam in the evaporator.

A hook-up in use at Oklahoma City was described. A 15-inch high-pressure manometer is placed on the inlet steam line, with a 1-inch orifice in a 1½-inch line. The manometer is connected with a ¼-inch connection 12 inches down stream. The necessary amount of steam for the proper stripping of the oil is determined from the condensate in the reflux tower and from the water leg. The manometer differential reading in inches mercury is regulated to keep this volume constant. The proper volume of steam to use in the evaporator is important, but it must be worked out for each individual unit operating condition.

The men were reminded that the temperature of the steam entering the evaporator is reduced approximately 10 degrees F. for each per cent moisture content. Every precaution should be exercised, it was said, to see that the steam used in the evaporator is as dry as possible under operating conditions.

Some of the more common causes of moisture in the steam line, the men were told, are; the failure of the steam trap to work properly, and the scaling up of the boiler flues. Some units which have experienced trouble in the scaling of the oil have also been found to be having boiler trouble due to bad water. It was said that if boiler water troubles could be eliminated, it might be expected that a part of the evaporator troubles would also be remedied.

The Texas Co. Moves Into New Offices

NEW YORK, April 18.—The Texas Co. has moved from 17 Battery place, where it has had its headquarters for 20 years, to the new Chrysler building at 42nd Street and Lexington avenue. The moving was begun at 6 p.m. April 4 and was completed in two days and two nights.

Thirty-three vans hauled 560 loads of office equipment, records and personal effects. The job required 200 movers. Everything was tagged and placed in position for the resumption of business April 7.

The Texas Co. occupies 14 floors of the Chrysler building and is said to be the largest user of office space in the Grand Central district. The moving job was one of the largest in New York history, it is said.

LOUISVILLE, Ky., April 16.—Tube-Turns, Inc., announces that Patrick H. Heeney, Apartado 298, Maracaibo, Venezuela, has been appointed as distributor for that company's products in Venezuela.

ADVERTISING PAGES REMOVED

The service truck operating out of the truck repair shop at Detroit

White Star Repairs Fleet of 100 Trucks At New Shop in Detroit

By E. L. Barringer
N. P. N. STAFF WRITER

DETROIT

ALL repairing of the White Star Refining Co.'s truck fleet is done at the company's new shop in Detroit. About 100 trucks comprise the fleet, operating in Michigan, Indiana, and Canada, and a truck gets in the shop at least once a year. In connection with the shop is a truck washing rack, and repainting is done at the company's paint shop in a nearby building.

The ability to service the fleet is extended beyond the four walls of the shop by a service truck. The car is equipped with a winch, jacks, tools and spot lights for emergency or towing service on the highway.

Last December the shop was completed. It is at the White Star bulk plant on Mt. Elliot at St. Charles St. In designing the building advantageous use was made of natural light. The shop is equipped completely, even to electrical servicing.

Entrance and exit drives to the bulk plant are on both sides of the shop building, and the bulk plant loading rack is at the rear. Several hundred feet to the east is the paint shop building with the truck repainting department in the rear room. Trucks may be moved from one building to the other on company property, and with a minimum amount of driving.

The truck repair shop is on the western side of a one-story brick building, and the nearest building to the west is several hundred feet away. Natural light is available through the outside wall which virtually is of glass except for the roof supports.

At the rear of the shop work benches are under the windows, and the trucks are headed towards the windows. Farther up, along the outside wall, are the machine shop, and the stock room. The drive in the garage is along the solid center wall. At the head of the drive is a wash room for workmen. The entire shop is about 50 feet wide by 150 feet long.

In a corner of the shop, at the head of the building, is the stock room partitioned off with a wire fence. Besides storage for parts, the room is used for an electrical and valve grinding machine shop. Replacement parts are stored in steel bins and shelves, while the machinery is on steel work benches along the outside wall and the partition.

The electrical department is equipped with a tester for armature windings, battery charger, and a generator tester. Other machines in the stock room are a valve grinder, and a valve reseater.

Just outside the stock room, by the windows, is the shop's machine department. Machines are belt driven from a five horsepower motor power plant attached to the roof supports.

The machine shop is equipped with

Looking up the work benches at White Star Refining Co.'s truck repair shop

a draw cut saw, a 22-inch drill, a 14-inch engine lathe, a grinder, a brake liner, and a brake riveter.

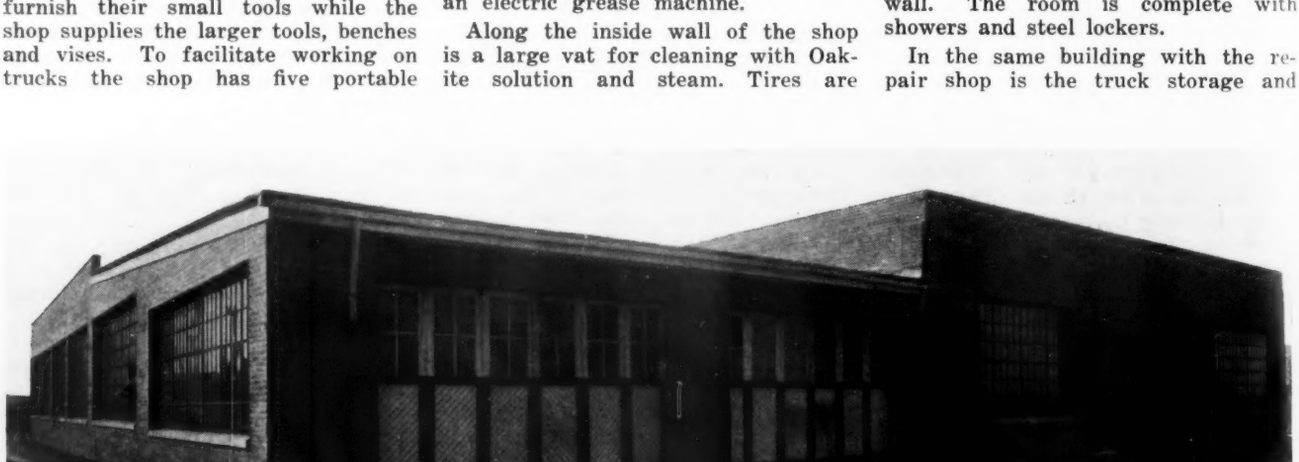
It is customary for mechanics to furnish their small tools while the shop supplies the larger tools, benches and vises. To facilitate working on trucks the shop has five portable steel tool benches. Overhead is a monorail crane.

Other portable equipment on the floor includes jacks, a roll car lift, and an electric grease machine.

Along the inside wall of the shop is a large vat for cleaning with Oakite solution and steam. Tires are stored along the wall in racks of steel tubing.

The employes' wash room is side of the stock room, along the inside wall. The room is complete with showers and steel lockers.

In the same building with the repair shop is the truck storage and



White Star Refining Co.'s truck repair shop in Detroit. Doors at the left are to the repair shop. The other part of the building, to the right, is for truck storage and washing

ADVERTISING PAGES REMOVED

The stock and small machine room. Parts are stored in bins and shelves, seen at the left. Ignition repair machines and other small machines are at the right

wash room. Outlets have been placed along the wall so that a considerable number of trucks could be washed at one time. Washing is done with a power washer, capable of operating at 300 pounds pressure, driven by a three horsepower motor.

The road service truck is kept at the repair shop. It is a two-ton chassis, governed now to a maximum speed of 50 miles an hour. Compartments have been built on both sides for storing tools and equipment. In the center, with entrance from the rear, is a runway for carrying tires and tools, and at the head, back of the cab, is a winch driven off the transmission.

There are four compartments on each side, all lighted by electricity from the truck's battery. On the left hand side is a compartment for the truck's tires, torches, chains and lanterns, and the fourth compartment at present is empty. On the right hand side compartments hold the ax, hammer and shovels; snatch block; jack handles; and the block and tackle. The truck is painted with aluminum paint and trimmed in White Star's blue.

Six mechanics are employed at the shop, besides the foreman. One man is employed to wash trucks during the night.

The shop is operated solely for the company's trucks. Salesmen own their own cars, are paid on a mileage basis, and tend to their own repairs. Automobiles owned by officials and employees also are kept out of the shop.

Imperial Makes Two Demands of Salesmen

Imperial Oil Ltd., marketing all over Canada, has two cardinal points in its instructions on how service station attendants should sell customers, and violation of either calls for immediate dismissal if brought to the attention of the executives.

The first point is that a customer should be asked "May I fill it up?" Never, "How many?" It is presumed that the attendant, and not the driver, should know how many gallons it would take to fill the tank if the tank is at the rear of the car. In case the gauge is on the dash the attendant can find out the contents of the tank without annoying the driver.

The second point is that the attendant is to look at the oil gauge, only with permission of the driver, and not to yank the hood. He is to stand at the hood, in a position to lift it and inquire, "May I check your oil?" If the driver does not desire the service, all right, but no jerking of hoods and no passing up a customer.

* * *

The Sale Was Not Made

There is a story going the rounds of a northern large city about the failure of strong-arm tactics in trying to get a dealer to change gasoline brands.

The story goes that salesmen approached a dealer to sell him on changing. When regular sales methods failed the dealer was told that if he did not come through the company would open a station on a vacant lot across the street.

"That's just fine," the dealer enthusiastically replied. "I've been wanting to sell that lot for a long time and I'll be glad to talk business."

FREE WHEEL TYPE

THIS LIFT

DE LUXE MODEL
15 inch channel with bulb angle.

No Oil on Exposed Parts!

Piston comes up DRY
No Oil Leaks

For over 12 years, the Globe "Hi-Preg" principle has been successfully used by the manufacturers of Globe Auto Hoist. Globe Auto Hoist is raised, lowered, and operated by air pressure on a column of oil. When air forces oil into the cylinder, it causes the lip of the impregnated cup leather to seal against the highly polished inner cylinder wall, thus forming a perfect seal and raising the piston. All pressure is kept below the base of the piston, where lifting is actually effected. The lifting piston is always dry, and there is no tightly-bound collar of packing about it.

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"GAS-BOY." Ser. No. 291,255. Robert G. Wilson, Philadelphia, Pa. For self-measuring gasoline pumps.

"OIL-BOY." Ser. No. 291,256. Robert G. Wilson, doing business as Wm. M. Wilson's Sons, Philadelphia, Penna. For self-measuring oil pumps.

"CITI GAS." Ser. No. 290,549. Citigas Corp., Atlantic City, N. J. For liquefied petroleum gas.

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"METALUBE." Ser. No. 291,733. The Metal Lubricant Company, Columbus, Ohio. For lubricants for gears, bearings, worm drives, chain drives, and transmissions and lubricating oils and greases.

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"STANAVO," and fanciful picture of an eagle-airplane. Ser. No. 289,996. Stanavo Specification Board, New York. For lubricating oils and greases and motor-fuel oils.

"HYPOID." Ser. No. 284,176. Enterprise Oil Co., Inc., Buffalo, N. Y. For fluid lubricant for gear lubrication.

"NU-CAR-OIL," and design. Ser. No. 290,173. John Blach, doing business as Nu-Car-Oil Sales Co., Chicago, Ill. For lubricant for internal-combustion engines.

"ZEPLIN AK." Ser. No. 291,162. The Hyvis Oil Co., Cleveland, Ohio. For gasoline.

"SIFO." Ser. No. 290,217. Joseph Loeb, Portland, Oregon. For portable emergency. Fuel tanks, and storage tanks.

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"JAKURV." Ser. No. 293,008. Sinclair Refining Co., New York, N. Y. For lubricating oils and greases.

INSURANCE companies long have recognized the value of dependable equipment. As evidence of their confidence in Oceco fittings, they apply their lowest rates on tanks which are Oceco-equipped.

If you are not now paying the lowest possible rate for insuring your tanks, it's time for an adjustment—either you need Oceco equipment or you deserve a reduction of your premiums.

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New Independent Trains Attendants With Laboratory Lectures

By E. L. Barringer
N. P. N. STAFF WRITER

COLUMBUS, O.

THROUGH the maze of fact and rumor of small jobbers selling out to large organizations come new companies to compete for business in the highly competitive field of marketing petroleum products.

Jobbers perturbed by the current sell-out wave may find comfort in the formation of these new companies. But aside from this consideration the newcomers are of interest to established companies from another angle.

How are these new companies managing their business? Are they bringing a fresh viewpoint of selling oils? Are they following beaten paths, or are they developing new ideas of bulk plant management and service station operation?

A new company that is striking out on its own with different methods is the Ohio Lubricating Co., at Columbus, O. It was organized last summer in a city that has seen, in the past few years, three large Independent marketers absorbed by big companies.

What new ideas are used by this company?

The management believes lubrication business at stations is gained through real lubrication—trained attendants. Hence, twice a month these attendants gather at the plant, watch tests run on lubricants, learn the values of various lubricants from various crude oils, learn the lubrication points on new model cars.

Back of the Ohio Lubricating Co. are two experienced oil men; one who sold out his business, the other who is getting into business after being employed by a large company. Ray Cunningham, for 14 years connected with Cities Service Oil Co. in Ohio, is president and general manager. O. U. Latto, formerly head of the Latto Oil Co., Uhrichsville, O., is vice-president and treasurer.

As the name implies, the company specializes in lubrication. Its business extends over the state in jobbing motor oil, through central Ohio in industrial oils, and in Columbus with five service stations. The company built a bulk plant last summer in Columbus.

Trained employees, Mr. Cunningham believes, is the keynote to lubrication business at a service station. His lubrication service, also, is offered over enclosed pits in steam heated buildings.

New employees are put to work at the station by the bulk plant. This station building houses the company's office, and Mr. Cunningham and the older employee train the new men. As openings develop the new men are moved to other stations, after a training period of at least four to five weeks.

Ray Cunningham
President and manager of the Ohio Lubricating Co., Columbus, O.

Only men who have been graduated from high school are employed. To retain them Mr. Cunningham pays them a salary, and a commission on all sales of lubricants.

Education of the employees does not stop with the initial training period. Twice each month the men gather at the bulk plant station for instructions on lubricants. Tests are run in the laboratory, comparative data on the value of oils from various crudes are discussed, and lubrication systems of new automobile models are subjects for the meetings.

Alemite lubrication books are kept at all stations, and are studied by the men. When a new model automobile comes on the market Mr. Cunningham obtains data direct from the dealer, and passes it on to his employees at the semi-monthly meetings. The men note the new models and add this information to their books.

In case of doubt about a lubrication point the men are to consult the book to be sure of their ground. That this instruction is followed may be checked by noting the grease and grime on the book.

The commissions have stimulated station men to solicit business in their territory all the time. In spare moments they go out, calling from house to house, and leaving leaflets provided by the company. Each week the company runs an advertisement in a Columbus daily newspaper.

As he is nearing the first birthday of his company, Mr. Cunningham is working on plans for the future. There is the proposed addition to the bulk plant warehouse—more room for barrel storage, a barrel washing machine, and storage for trucks. For the service stations he is considering a follow-up system of lubrication customers.

AT THE new Columbus bulk plant last year oils were received in tank car lots, blended and shipped in barrels. Gasoline is stored in tanks with air and steam lines for blending, and delivered in tank wagon lots.

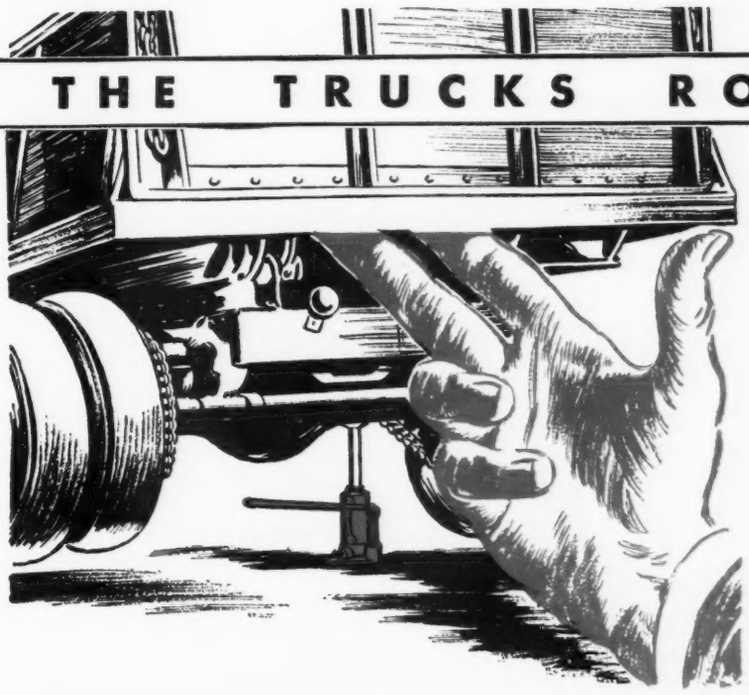
The gasoline storage consists of four 20,000-gallon tanks buried at the plant. Each tank is equipped with steam coils and a compressed air line. Along the bottom of each tank is an air line of 1-inch pipe. Every 18 inches is a T fitting, turned in alternate directions. Three steam coils, of 1½-inch pipe, are at the bottom of each tank also.

In blending gasoline the steam coils raise the temperature to 85 to 90 degrees. Then air is turned on to agitate the gasoline. The heating and agitation is resorted to in order to obtain a stable and thorough blend.

Anti-knock value and color are the main features of the company's gasoline. The grade that sells at the regular price is colored green, branded "Superior," and has some anti-knock value. The premium grade is O-Hi-O Red, with a higher anti-knock value.

Lubricating oil is stored at the

KEEPS THE TRUCKS ROLLING



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Back-breaking mechanical jacks are too slow and bothersome for the leviathans of commercial hauling these days. The time their use wastes soon pays for a fast Blackhawk Hydraulic — the jack of long, trouble-free service.

Keep the trucks rolling and the drivers satisfied. Equip with the jacks that are standard on leading heavy trucks and truck fleets — equip with Blackhawk Hydraulics.

See your jack dealer. Mail the coupon to us.

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Also world's largest manufacturer of socket wrenches.

There's a Blackhawk for every need—1 to 75 tons capacity—for automotive, shop, construction, and industrial work.

There's work for Blackhawk Jacks all over the shop — for lifting, pressing, bending, straightening jobs. Micrometer accuracy.

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Send literature on truck and shop jacks. ☐ Include wrench folder.

Name_____

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Bottle Fold Type Folio

Your Name in Gold Free

Complete with Bottle Fold and Bottles *only* **$15.30**

364—A very complete and practical folio made from heavy 5-oz. black cowhide. 3¼-inch pocket that holds leather handled bottle fold. Contains sixteen 4-oz. plain bottles. One-inch pocket for stationery. Leather case containing six ½ oz. jars $3.25 additional.

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Why not let us ship you a trial order for a car of 45 or 46 gravity SUPERIOR KEROSENE today?

SUPERIOR OIL WORKS

Warren, Pa.

Refiners of Petroleum

Bulk lubricating oil storage at the Ohio Lubricating Co.'s plant in Columbus, O. These tanks hold 8000 gallons each. The pump house is in the center, and the lines in the left foreground are to the gasoline truck loading rack

bulk plant in six upright tanks of 8000 gallons capacity each. Oil is piped to the blending kettle inside the warehouse. Finished oils are stored in a battery of ten tanks in the warehouse, each holding 1020 gallons.

Blending is done in a kettle built by Morrison Bros. The kettle is about 60 inches in diameter and six feet deep, with a capacity of blending about 4000 gallons of oil a day.

The kettle is lined with steam pipes and has a steam jacket at the bottom. Around the inside are 24 two-inch upright steam lines, and there is a 6-inch steam jacket on the bottom. There are nine sets of paddles, driven by a three-horsepower General Electric motor with silent chain drive through two sets of reduction gears.

Operation of the lubrication end of the bulk plant is supervised by Mr. Cunningham. He is in charge of his laboratory, directs the work, and is assisted by the warehouse man. Mr. Cunningham has an able assistant in his half-brother, Bruce Shue, who is capable of running the laboratory, blending lubricants, as well as doing repair work around the plant or at the service stations. During a recent absence of Mr. Cunningham the plant was operated entirely by Mr. Shue.

The laboratory equipment consists of a Tagliabue distillation apparatus, a Tagliabue Saybolt universal viscosimeter, a Cleveland open cup testing apparatus, a Tagliabue A.S.T.M. cloud and pour test apparatus, a Tagliabue Conradson carbon tester, numerous graduated flasks, hydrometers, and a two burner hot-plate.

The bulk plant pump house is in a separate building, between the warehouse and the lubricating oil storage tanks. There are three Blackmer rotary pumps, driven by two 5-horsepower Jeannin electric motors. From the tank car unloading rack, with overhead lines, three pipes enter the pump house and to storage. Two lines are for light oils, and one for lubricating oils.

Remote control switches are installed in the plant—one on the gasoline truck loading rack, one in the laboratory and blending room, and another in the warehouse.

Two trucks now are operated from the bulk plant. The tank truck is a four-ton Pierce-Arrow, with a capacity of 1050 gallons. The other is a Ford Model AA 1½ ton stake truck. All gasoline tanks at service stations hold 1, 2 or 3000 gallons, so the large truck makes complete dumps at each stop.

Preparedness Practiced in Fuel Oil Storage

An industrial plant in Columbus O., believes in preparedness—against another shut-off of its natural gas supply, and for the past 10 years has kept 300,000 gallons of fuel oil in storage at the plant.

Shortly after the World war the natural gas supply was shut-off and the plant had to find some available fuel oil to keep operating, and to find it quickly. At the time the company stood to drop thousands of dollars in profits in case of a plant shut down.

The fuel oil was found, but officials decided not to place themselves open to a similar situation. The yard was dug up and concrete oil storage buried. The 300,000 gallons of fuel oil was placed in the tank, and still remains there in case of an emergency.

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When Strong Independents Sell Out Market Disturbances Multiply

By Fred C. Otto

Mr. Otto is in the sales organization of one of the independent refining companies and has had many years' experience in the oil marketing industry.

WHEN I speak about an independent oil jobber I do not have in mind a wholesaler of gasoline and motor oil. I refer to companies who carry a full line of lubricants in stock and are able to supply the needs of automotive dealers as well as industrial concerns.

This is the real oil jobber and it is he who puts into his business more capital, more brains, more employes and a broader vision than half a dozen or more so-called oil jobbers, who only buy gasoline in carloads and from 10 to 20 drums of motor oil a month.

The latter is in many parts of the country mostly only the owner of one or two service stations, through which he sells the bigger portion of the purchased goods. Besides his own outlets, he generally owns a small truck and serves a few privately owned curb outlets or service stations of more or less small output. A number of this kind of jobbers has come from the price-cutting-bulk-stations, which a few years ago were operated in many sections of the United States. I do not consider this kind of jobbers as real oil jobbers.

Around 1910 there were a great many concerns which were oil jobbers in the true sense of the word. They had their salesmen on the road, fitted out with price lists, samples and—most important—with proper knowledge as to the application of the different kinds of lubricants. These salesmen knew their oils and were able to make intelligent recommendations.

Selling oils and greases ten years ago was still a lucrative business and the price charged to the consuming industry allowed mostly 20 per cent commission to the salesmen, 20 per cent for overhead, freight, container, handling, etc., and 20 per cent gross profit. For a great number of specialties, either liquid oil lubricants or greases, prices were charged and willingly paid which enabled the oil jobber to add 100 per cent and more to his own cost price. Such was sound business.

Today the number of real oil jobbers is much smaller than it has been at any previous time. Many have been swallowed up by major companies, who thought they could gain by eating first the little fellow and then his food. In many cases they have been misled by their calculations and found, after a year or so, that the little fellow was alive again and had started a new oil distributing company.

Instead of having one real oil jobber operate in a certain territory and selling him the goods at a low price, enabling him to receive a fair return, the situation after the swallowing-up has been changed considerably and two companies are fighting for the market.

Since the little fellow was well known in his territory, his way of approach was easy, and combined with his thorough knowledge of the needs of the customers, he was very often able to retain a good portion of the previous business. The next step in thousands of cases was the reduction of the prices for industrial oils and greases by the major company in order to retain the business or to take business away from the little fellow.

Who was to blame for this condition and also for the ruinous prices? In my opinion, in 95 per cent of all cases, only the major company. When one of the big oil companies buys one of the smaller distributing companies, the management of the big company fails from the standpoint of sound business when it does not take the owner of the swallowed company into its own organization and give him such responsibility and earnings that he feels at home among the employes of the major company.

When a man has been able to build up his own business to such a point that his big competitor wants to buy him out, he must be good. And when a man, according to his previous record, has proven that he is good, there is no reason why the big competitor should not give him such responsibility as it seems necessary to hold him.

The major oil company is also to blame for the too low prices for industrial lubricants. In a big mining district in the United States one of the major oil companies sells its blavk oil at 7.5 cents per gallon delivered by truck over a distance of 100 miles when the entire load (other lubricants can be included) is at least six drums. This major oil company has to pay its parent organization 5.8 cents per gallon delivered in tank cars.

The reasons for such conditions are twofold: First, the major oil company in question wants to keep two well known mine car greases out of that territory and second, the ruinous prices of some industrial oils have never been brought to light.

Today, as stated before, there are still a number of real oil jobbers, some of them doing big business. The oil industry has neither the intention to exterminate these independent oil jobbers nor does the oil industry desire to keep them out of the industrial field. In fact, even general managers of major oil companies have expressed their desire to reinforce the position of the industrial oil jobber, feeling that the time has come when the industrial oil jobber can be used as a bulwark against the penetration of a certain district by aggressive major companies, either operated under foreign influence or operating in states remote from the district involved.

THERE are a number of large cities in which for many years the local brand of oil or gasoline could not be pushed out of the picture by an invading competitor. The local sentiment proved to be stronger than all the advertising measures of the invader. Such local brands and such local companies proved to be a stimulus and a guarantee for peace among the competitors. No serious disturbance of the local market was visible, sometimes for several successive years.

I know of a number of cases, however, where the market was thrown into a turmoil as soon as such a local company changed hands and became a subsidiary of major out-of-state companies. The result was that everyone was the loser; everyone received a small share of the business, which did not bring sufficient returns, and consequently tried to wrestle some more of the business away from other companies.

It does not pay to destroy the independent oil jobber. He is a guaran-

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The Air Junior

High Pressure Grease Gun

Handy
Quick
Positive Action
Entirely Automatic

The Air Junior is a development from the well-known Graco Pistol Gun, receiving its grease supply from a 1½ pound grease tube instead of from a large grease supply tank. It is simple in construction, with only one moving part, and has a rapid-fire action that builds a grease pressure up to 8,000 pounds. Easily handled and simple to refill. Built for hard and continuous service.

The Graco Air Junior is practical and economical for any lubricating department, and can be used to advantage as auxiliary equipment.

For complete information and prices on the Air Junior and other Graco Lubricating Equipment (Graco Pistol Gun, Graco Meter Gun, Graco Spray Gun, etc.) write us for name of nearest distributor.

GRAY COMPANY, INC.

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tee for an undisturbed market and he is always inclined to increase the price of the commodities sold by him in order to get a fair return for his investment. The independent oil jobber keeps the out-of-state competitor away and his preservation is in the interest of the whole refining industry.

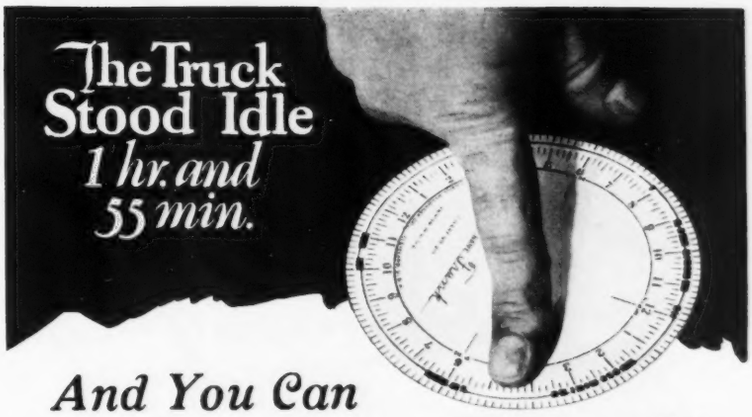
When, at the conference in Washington, one of the representatives of the Oklahoma oil producers hit at the Shell, for instance, with the remark of being a foreign concern, he was indeed mistaken, for this company is financed with American money and largely managed in this country by American men. On the other hand, he was right in prophesying that the aggressiveness of this concern will be felt not only by the small oil men, but by the major oil companies just as well. With the attempted destruction of the independent oil jobber the old major companies are breaking down the barriers around a formerly secure potential market, making it easy for an invader to establish himself in a new territory.

The independent oil jobber is a necessity. The preservation of this institution is in the interest of the major oil companies. The independent oil jobber does not need any subsidizing, he does not need any help, he does not ask for any favors, he is strong enough to make his way alone. He only asks for one thing, that is fair play. Fair play on the side of major companies.

He expects the major oil companies to establish better consumer prices and quit the present cut price situation, where engine oils are sold from 18 to 20 cents and other products at similar prices. Too many commodities in the oil and grease line are sold by major companies to large industrial concerns at such low prices that it is impossible for any one to make money.

One branch of one major company has lost $8000 in a single year on a contract made with one company running several furnaces and a by-products plant in the South. All prices offered to consumers for industrial lubricants are much too low. When the Vacuum Oil Co. is able to receive good prices, then Standard, Gulf and the rest should be able to attain the same. Lubricating oils and greases for industrial use should be quoted on the open market and the quotation should be published among other commodities in the different trade journals.

In many other industries uniform quotations are issued from different cities and by many different firms. They are not in touch with each other and do not violate the Sherman act, but they possess the spirit of cooperation. It can be done elsewhere—and it can be done in the oil industry, too.



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No more "hunches," no more suspicions, no more unfounded accusations, ***no more arguments about delays—***

Just quiet facts, which everybody respects—shown right on the chart.

We ask you, now isn't that the best way to manage tank trucks?

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Write for Booklet X

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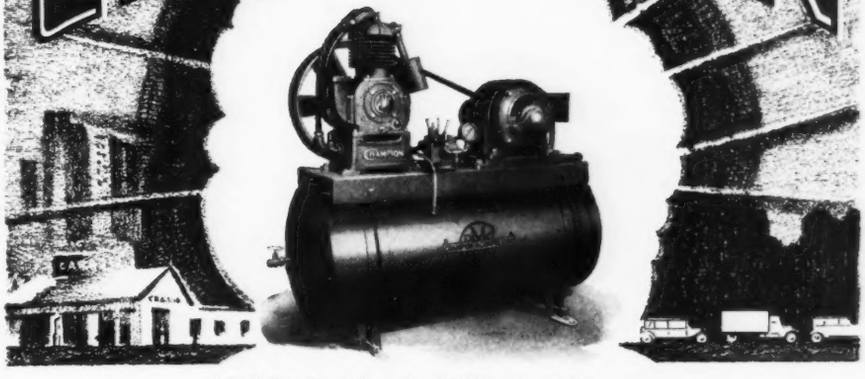

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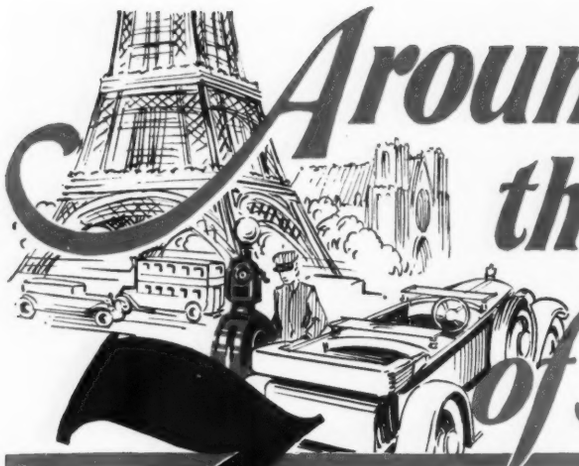

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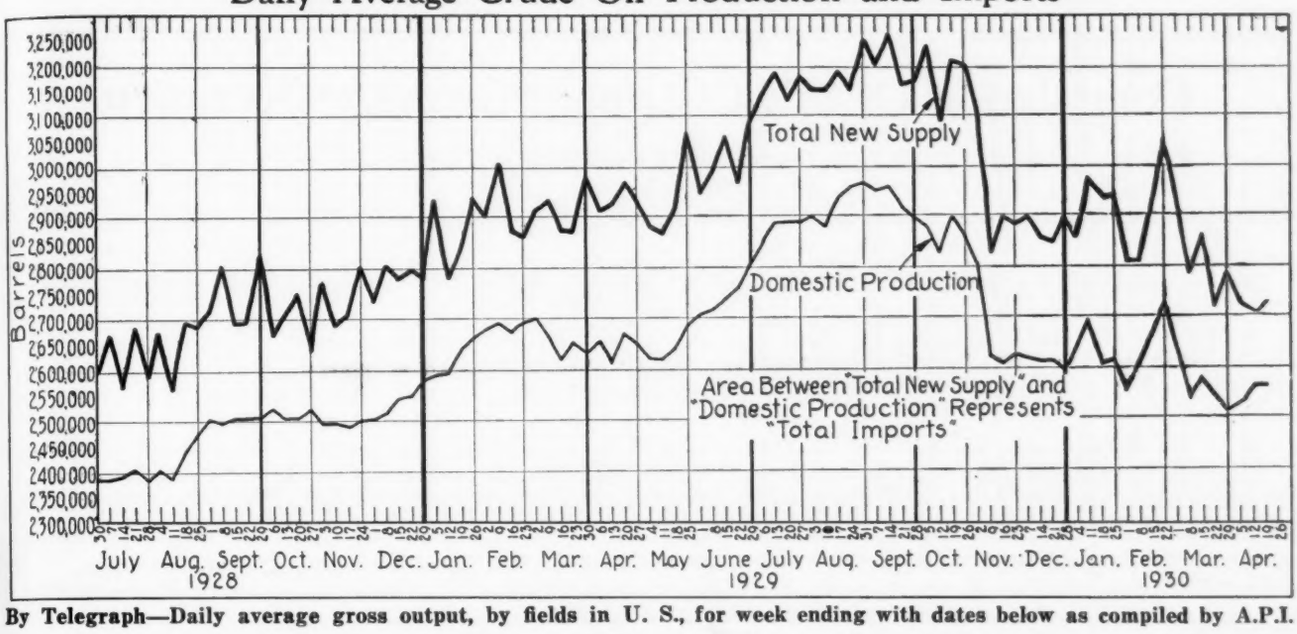
Daily Average Crude Oil Production and Imports



By Telegraph—Daily average gross output, by fields in U. S., for week ending with dates below as compiled by A.P.I.

PRODUCTION SUMMARY	April 19	April 12
Production east of Rockies	1,933,000	1,943,450
Decrease		10,450
Total production in U. S.	2,560,900	2,561,150
Decrease		250
Crude oil imports	165,285	139,715
Increase		25,570
Total new crude supply	2,726,185	2,700,865
Increase		25,320

OKLAHOMA	Apr. 19	Apr. 12
Allen Dome	19,400	19,750
Asher	2,100	2,100
Blackwell	3,300	3,350
Bowlegs	21,200	20,800
Braman	3,500	3,450
Bristow-Slick	16,200	16,100
Burbank	16,400	16,500
Carr City	9,650	9,800
Cromwell	7,650	7,850
Cushing	14,300	14,300
Davenport	1,150	1,150
Duncan District	7,450	7,200
Earlsboro	38,950	35,400
East Earlsboro	39,450	41,950
Fox	1,250	1,250
Garber	4,750	4,550
Graham	3,500	3,550
Healdton	11,900	11,950
Hewitt	7,150	7,200
Hubbard	1,600	1,600
Konawa	7,650	8,650
Little River	41,950	41,550
Little River, East	19,500	19,000
Logan County	6,600	8,100
Maud	5,550	5,950
Mission	12,600	11,450
North Okmulgee	10,900	10,900
Oklahoma City	104,150	107,850
Osage (Outside Burbank	26,700	26,650
Papoose	2,850	2,950
Pearson	650	650
Sasakwa	10,550	11,900
St. Louis	38,200	38,200
Scholem-Alechem	13,750	13,350
Searight	10,400	10,550
Seminole	20,150	20,400
Seminole, East	3,350	3,250
South Okmulgee	6,300	6,300
Thomas	700	650
Tonkawa	7,800	7,800
Wewoka	3,700	3,750
Yale-Jennings	9,350	9,850
Others	63,900	64,850
Total, Oklahoma	658,100	665,250
Decrease		7,150

KANSAS		
Augusta-Fox Bush	2,900	2,900
Churchill	4,300	4,600
El Dorado-Towanda	13,450	13,450
Florence-Covert	800	800
Greenwood County	18,950	19,000
Oxford	2,650	2,750
Peabody-Elbing	3,300	3,300
Rainbow Bend	1,100	1,100
Russell	3,400	3,400
Sedgwick County	20,900	21,150
Voshell	12,800	20,500
Others	32,500	32,200
Total, Kansas	117,050	125,150
Decrease		8,100

NORTH LOUISIANA		
Caddo, light	10,050	9,950
Caddo, heavy	2,900	2,800
Cotton Valley	2,150	2,100
De Soto and Red River	3,100	3,100
Haynesville	4,550	4,550
Holly	1,150	1,250
Homer	3,450	3,450
Sarepta Carterville	3,150	3,700
Urania	5,300	5,250
Zwolle	4,150	4,250
Others	1,800	1,800
Total, North Louisiana	41,750	42,200
Decrease		450

ARKANSAS		
Champagnolle	4,750	4,750
El Dorado	4,000	4,000
Lisbon	1,000	1,050
Nevada	1,000	850
Smackover, light	5,400	5,300
Smackover, heavy	40,500	40,450
Stephens	950	950
Others	200	200
Total, Arkansas	57,800	57,550
Increase		250

TEXAS (OUTSIDE GULF COAST)		
Panhandle District		
Carson County	9,700	9,100
Gray County	60,800	60,600
Hutchinson County	21,900	22,600
Wheeler County	700	550
Others	500	600
Total, Panhandle Texas	93,600	93,450
Increase		150
North Texas		
Archer County	18,000	17,450
Burkburnett	8,050	8,100
Electra	11,300	11,300
Iowa Park and K. M. A.	5,300	5,150
Montague-Cooke	10,600	10,600
Wilbarger	24,100	25,150
Others	2,000	2,000
Total, North Texas	79,350	79,750
Decrease		400
West Central Texas		
Brown County	7,600	7,650
Callahan County	3,650	3,700
Coleman County	4,600	4,650
Eastland-Desdemona	5,500	5,500
Jack County	4,100	4,150
Palo Pinto County	700	700
Shackleford County	6,500	6,550
Stephens County	5,800	5,850
Throckmorton County	850	800
Young County	13,450	12,500
Others	1,400	1,400
Total, West Central Texas	54,150	53,350
Increase		800
West Texas		
Crane and Upton Counties	43,500	45,000
Crockett County	2,100	2,100
Ector County	8,100	6,450
Howard County	40,100	38,200
Jones County	2,100	2,100
Mitchell and Scurry Counties	2,200	2,200
Reagan County	16,500	16,800
Winkler County	79,650	81,000
Yates	112,200	110,550
Balance Pecos County	4,700	5,300
Others	2,800	2,700
Total, West Texas	313,950	312,400
Increase		1,550
East Central Texas		
Boggy Creek	3,650	3,700
Corsicana-Powell	5,900	5,950
Currie	300	300
Mexia	4,000	4,100
Nigger Creek	200	200
Richland	250	250
Van Zandt	19,100	18,300
Wortham	850	850
Total, East Central Texas	34,250	33,650
Increase		600
Southwest Texas		
Dale	300	300
Darst Creek	15,000	15,000
Laredo District	8,300	8,450
Luling	9,800	9,850
Lytton Spring	900	900
Salt Flat	21,200	21,900
Somerset	1,300	1,300
Others	2,000	2,000
Total, Southwest Texas	58,800	59,700
Decrease		900
Total, Texas, (Outside Gulf Coast)	634,100	632,300
Increase		1,800

GULF COAST		
Coastal Texas		
Barbers Hill	26,300	27,000
Batson	1,200	1,250
Big Creek	2,800	3,100
Blue Ridge	1,800	1,800
Boling	1,150	1,200
Damon Mound	600	600
Esperson	3,100	3,200
Fannett	1,100	1,100
Goose Creek	4,300	4,500
Hull	8,700	8,800
Humble	20,200	20,500
North Dayton	1,000	1,350
Orange County	2,300	2,400
Pierce Junction	10,350	11,000
Port Neches	1,800	1,950
Raccoon Bend	9,000	10,250
Refugio County	40,850	38,900
Saratoga	1,000	1,000
Somerville	1,750	1,800
Sour Lake	2,200	2,200
South Liberty	4,450	4,550
Spindletop	15,600	15,800
Sugarland	11,050	10,000
West Columbia	5,800	5,950
Others	7,300	5,800
Total, Coastal Texas	185,700	186,000
Decrease		300
Coastal Louisiana		
East Hackberry	2,600	2,650
Old Hackberry	1,300	1,450
Edgerly	550	550
Evangeline	900	1,000
Lake Barre	1,100	1,050
Lockport	2,700	2,700
Port Barre	2,300	2,250
Sulphur Dome	4,300	4,400
Vinton	3,850	3,900
Others	2,050	2,200
Total, Coastal Louisiana	21,650	22,150
Decrease		500
Total, Gulf Coast	207,350	208,150
Decrease		800

ROCKY MOUNTAIN		
Wyoming		
Big Muddy	2,050	2,050
Elk Basin	800	750
Grass Creek	2,200	2,100
Labarge	1,900	2,250
Lance Creek	150	150
Lost Soldier	3,250	3,250
Oregon Basin	4,450	4,450
Rock River	2,200	2,250
Salt Creek	31,200	29,400
Others	2,500	2,400
Total, Wyoming	50,700	49,050
Increase		1,650
Montana		
Cat Creek	1,200	1,200
Pondera	3,200	2,000
Sunburst	6,000	6,000
Others	50	50
Total, Montana	10,450	9,250
Increase		1,200
Colorado		
Florence	600	550
Fort Collins	1,450	1,500
Moffat (Craig)	1,100	1,000
Others	1,400	1,500
Total, Colorado	4,550	4,550
New Mexico		
Artesia	700	800
Balance Lea and Eddy Counties	7,800	8,100
Hogback	450	450
Rattlesnake	1,500	1,700
Table Mesa	100	100
Others	900	950
Total, New Mexico	11,450	12,100
Decrease		650
Total, Rocky Mountain	77,150	74,950
Increase		2,200

CALIFORNIA		
Dominguez	9,700	9,700
Elwood-Goleta	47,500	45,500
Huntington Beach	29,000	28,600
Inglewood	17,600	17,600
Kettleman Hills	14,000	14,300
Long Beach	98,800	99,500
Midway-Sunset	70,000	70,000
Santa Fe Springs	130,500	124,000
Seal Beach	24,800	23,500
Ventura Avenue	44,000	43,000
Others	142,000	142,000
Total, California	627,900	617,700
Increase		10,200

EASTERN		
(Not including Michigan)	128,000	125,000
Increase		3,000

MICHIGAN		
Mt. Pleasant	6,700	7,500
Muskegon	4,800	5,150
Saginaw	200	250
Total, Michigan	11,700	12,900
Decrease		1,200

Compilation Of Mid-Continent Refinery Operations

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National Petroleum News

Mid-Continent Refinery Operations Week Ended April 18 (By Telegraph)

	Kansas	Oklahoma	North & Cent. Texas	West Texas	North La.-Ark.	Total Week Ended Apr. 18
Plants Reporting....	12	29	25	15	12	93
Da. Av. Cap. (Bbls.)..	94,500	161,700	106,100	82,000	77,000	521,300
Da. Cracking Capacity	30,700	52,600	17,200	5,000	22,700	128,200
Da. Av. Crude Runs..	77,121 + 6.0	131,224 + 5.7	74,193 + 8.7	44,973 + 7.0	61,308 + 9.1	388,819 + 7.0
Da. Av. Other Oils...	8,429 — 16.8	4,437 +457.4	2,963 + 92.0	3,798 +120.3	608 + 6.1	20,235 + 37.0
GASOLINE—Gallons						
Stocks, Apr. 11.....	27,505,000	66,206,000	23,470,000	10,288,000	13,654,000	141,123,000
Prod. 4-11 to 4-18....	12,504,000 — 4.1	21,131,000 + 14.1	9,654,000 + 7.8	5,113,000 + 19.2	5,747,000 + 13.7	54,149,000 + 8.6
Ship. 4-11 to 4-18....	14,845,000 + 21.0	21,334,000 + 2.6	10,636,000 + 23.2	6,429,000 + 32.7	6,055,000 + 11.9	59,299,000 +14.1
Stocks, Apr. 18.....	25,164,000 — 8.5	66,003,000 — 0.3	22,488,000 — 4.2	8,972,000 — 12.8	13,346,000 — 2.3	135,973,000 — 3.7
Ratio Sales to Prod...	118.7%	101.0%	110.2%	125.7%	105.4%	109.5%
KEROSENE—Gallons						
Stocks, Apr. 11.....	7,016,000	6,506,000	2,761,000	23,000	2,329,000	18,635,000
Prod. 4-11 to 4-18....	2,474,000 + 6.4	2,865,000 + 2.6	1,526,000 — 2.3	.....	384,000 — 7.0	7,249,000 + 19.0
Ship. 4-11 to 4-18....	2,061,000 — 29.6	3,455,000 + 61.3	1,561,000 + 6.0	.....	521,000 — 36.3	7,598,000 + 2.7
Stocks, Apr. 18.....	7,429,000 + 5.9	5,916,000 — 9.1	2,726,000 — 1.3	23,000	2,192,000 — 5.9	18,286,000 — 2.0
Ratio Sales to Prod...	83.3%	120.6%	102.3%	.....	135.7%	104.8%
STOVE DISTILLATE—Gallons						
Stocks, Apr. 11.....	2,938,000	3,038,000	141,000	218,000	46,000	6,381,000
Prod. 4-11 to 4-18....	272,000 — 25.5	668,000 + 6.0	245,000 + 53.1	113,000 — 21.0	186,000 + 46.5	1,484,000 + 4.1
Ship. 4-11 to 4-18....	531,000 +168.2	861,000 + 16.8	212,000 — 1.9	98,000 — 39.1	149,000 + 17.3	1,851,000 + 28.6
Stocks, Apr. 18.....	2,679,000 — 8.8	2,845,000 — 6.4	174,000 + 23.4	233,000 + 6.9	83,000 + 80.4	6,014,000 — 5.8
Ratio Sales to Prod...	195.2%	128.9%	86.5%	86.7%	80.1%	124.7%
GAS OIL—Gallons						
Stocks, Apr. 11.....	6,698,000	41,733,000	1,681,000	4,827,000	8,599,000	63,538,000
Prod. 4-11 to 4-18....	1,820,000 — 4.7	2,885,000 + 52.2	1,046,000 + 30.9	553,000 — 10.1	2,423,000 + 10.8	8,727,000 + 17.9
Ship. 4-11 to 4-18....	1,074,000 — 24.6	1,612,000 — 29.8	315,000 — 81.0	304,000 — 44.7	2,229,000 + 12.3	5,534,000 — 30.1
Stocks, Apr. 18.....	7,444,000 + 11.1	43,006,000 + 3.1	2,412,000 + 43.5	5,076,000 + 5.2	8,793,000 + 1.2	66,731,000 + 5.0
Ratio Sales to Prod...	59.0%	55.9%	30.1%	55.0%	92.0%	63.4%
FUEL OIL—Gallons						
Stocks, Apr. 11.....	14,338,000	30,494,000	67,053,000	12,676,000	24,013,000	148,574,000
Prod. 4-11 to 4-18....	6,042,000 + 10.5	7,999,000 + 3.5	8,790,000 — 0.6	7,075,000 + 7.2	5,734,000 + 2.4	35,640,000 + 4.1
Ship. 4-11 to 4-18....	4,367,000 — 13.2	3,910,000 — 43.9	8,378,000 + 98.4	9,848,000 + 33.6	5,428,000 —14.3	31,931,000 + 6.7
Stocks, Apr. 18.....	16,013,000 + 11.7	34,583,000 + 13.4	67,465,000 — 0.6	9,903,000 — 21.9	24,319,000 + 1.3	152,283,000 + 2.5
Ratio Sales to Prod...	72.3%	48.9%	95.3%	139.2%	94.7%	89.6%

Gasoline Produced by Various Methods, Week Ended April 18

	Kansas	% of Total	Oklahoma	% of Total	North & Cent. Texas	% of Total	West Texas	% of Total	Louisiana-Arkansas	% of Total	Total	% of Total
Straight Run.....	7,790,000	62.2	14,439,000	68.3	6,873,000	71.2	4,577,000	89.5	1,994,000	34.7	35,673,000	65.9
Cracked.....	3,760,000	30.1	5,149,000	24.4	2,209,000	22.9	307,000	6.0	2,903,000	50.5	14,328,000	26.5
Natural.....	954,000	7.7	1,543,000	7.3	572,000	5.9	229,000	4.5	850,000	14.8	4,148,000	7.6
Total.....	12,504,000		21,131,000		9,654,000		5,113,000		5,747,000		54,149,000	

+ or — columns are % change over previous week.

Mid-Continent Gasoline Shipments Set New Record

Staff Special—By Telegraph
TULSA, April 21

A NEW record for gasoline shipments was established by the Mid-Continent refiners reporting weekly operations to this publication when the total for week ended April 18 was 59,299,000 gallons.

One of the major reasons for the heavy shipments was basis of contracts prevailing in the Mid-Continent. The contracts carry a price for current week based on the published prices of the previous week and it will be recalled that crude and tank wagon advances came after the prices had been published which gave the buyers an opportunity to obtain their requirements at prices considerably under those established after the advances.

Crude runs were increased 25,400 barrels daily average with all districts sharing in increase. Gasoline production was increased 4,300,000 gal-

Summary for the Month

Production and shipments, all reporting refineries, for four weeks ended April 18. Change in stocks figures from March 21.

GASOLINE

	Gallons
Production	198,153,000
Shipments	210,073,000
Net change in stocks	—11,920,000
Ratio sales to production	106.0%

KEROSENE

	Gallons
Production	26,680,000
Shipments	27,657,000
Net change in stocks	—977,000
Ratio sales to production	103.7%

STOVE DISTILLATE

	Gallons
Production	5,852,000
Shipments	6,855,000
Net change in stocks	—1,003,000
Ratio sales to production	117.1%

GAS OIL

	Gallons
Production	33,557,000
Shipments	27,071,000
Net change in stocks	+6,486,000
Ratio sales to production	80.7%

FUEL OIL

	Gallons
Production	133,041,000
Shipments	127,830,000
Net change in stocks	+5,211,000
Ratio sales to production	96.1%

lons, but with the high shipments total gasoline stocks were reduced 5,100,000 gallons. Stocks were reduced in each district.

Kerosene production was increased 1,000,000 gallons with shipments higher by 200,000 gallons, causing a reduction in stocks of 300,000 gallons.

Distillate production was virtually unchanged, while shipments were 400,000 gallons higher, causing a reduction of 360,000 gallons in stocks.

Gas oil stocks were increased 3,000,000 gallons with production higher and shipments lower. Fuel stocks increased 3,700,000 gallons.

Wisconsin Jobbers to Talk Code

MILWAUKEE, April 21.—The annual business meeting of the Wisconsin Petroleum Association will be held on May 14 at the Hotel Pfister, Milwaukee. Election of officers and directors will take place.

The chief subject of discussion will be the code of marketing ethics. Although a large majority of Wisconsin oil jobbers have already signed it, according to the April issue of "The Thunder Bird," the goal is to obtain 100 per cent support. Well known speakers will give brief talks but these speakers have not yet been announced.

Union Curtails Production

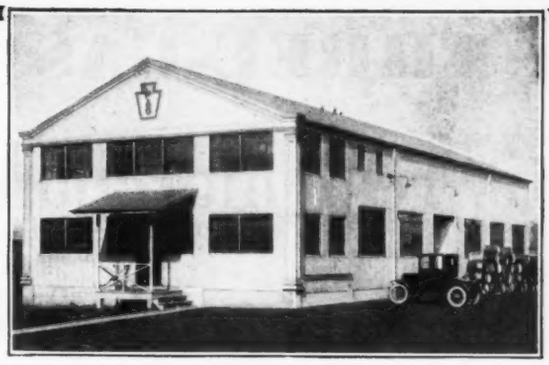
CLEVELAND, April 21.—Union Oil Co. of California produced in the first quarter of 1930 4,750,000 barrels of crude oil, subject to royalties, compared with 5,150,000 barrels in the first quarter of 1929, the company has announced. Shut-in production was estimated at 55,000 barrels daily in the first three months of this year. The company's production and purchases of crude oil and natural gasoline the first quarter averaged 108,000 barrels daily.

Correction on Veedol Prices

CLEVELAND, April 18.—The Tide Water Oil Sales Corp., of New York, points out that the reference in the article on page 133 of the April 2 issue of NATIONAL PETROLEUM NEWS, to the effect that the Tide Water Company had reduced its price of Veedol motor oil to 25 cents a quart is not correct for all parts of the country.

The company points out that the price of Veedol varies in different sections. In certain sections of the east it sells for 25 cents a quart in crankcase lots and 30 cents in lesser quantities. In Ohio and Michigan and a number of other middle west points, the retail price is generally 30 cents in both crankcase lots and single quarts. In some higher freight zones, notably the Pacific Coast, the price is 35 cents a quart.

WARREN, Pa.—The Chicago office of Struthers-Wells Co., with headquarters here, is now in the new Civic Opera Bldg. at 20 North Wacker Drive.



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Here's the new way—the progressive way—to sell gasoline! You give a motorist not only a brand that assures quality, but a *type* that fits his engine and his own driving habits. Today—with changing engines and varying driving conditions—*no one kind* of gasoline can satisfy every motorist and serve every purpose!

Sinclair Dealers now offer *three* gasolines that give three different performances!

Sinclair Aircraft Gasoline, the *Ace* of high test gasolines... gives fast starting and zooming acceleration, brilliant action in traffic and sporty performance on the road. Sinclair Aircraft is the Ace of high test gasolines because it is specially manufactured at Sinclair Refineries, meeting the requirements of the Federal Specifications Board for Aviation Gasoline—domestic grade—and gives sustained power. Due to its careful fractionation it is free from dissolved gases which cause gas locks, uneven distribution, galloping and engine balk.

Sinclair H-C Gasoline... stops knocks and keeps them stopped even on long hills... H-C is high compression fuel with a four-year record of superior engine performance—all gasoline—nothing added!

And—if a customer prefers to pay three cents less per gallon—there's Sinclair Regular Gasoline—for economy and mileage—full of eager power. The quality gasoline at a popular price. Let your customers *choose* their gas from these three remarkable gasolines—remember they're *all* gasoline, nothing added! Sinclair Three-Gas Service will increase your gallonage!

SINCLAIR REFINING COMPANY, INC., 45 Nassau Street, New York—*Atlanta, Chicago, Houston, Kansas City*

Refinery - Tank Wagon Markets

National Petroleum News

Penna. Gasoline Advances Under Heavy Future Buying; Other Markets Quiet

CLEVELAND, April 22

DEFERRED shipment buying of gasoline in western Pennsylvania stood out rather prominently in refined oil tank car markets in the week ended April 19. Middle western gasoline markets quieted down considerably following the abnormal activity of the previous week and prices in this area backed and filled.

Markets for other oils in practically every refining district of the United States were featureless both from the standpoint of activity and prices.

Trading of gasoline futures in Pennsylvania was on a much larger scale than it has been at any time in the past six months, according to reports from important factors in this market. Most of the actual buying that developed constituted small lots—one to five cars—but several inquiries received from jobbers and also resale agents called for anywhere from 100 to 175 cars of gasoline for May delivery.

As high as 8.50 cents was reported paid by jobbers for U. S. Motor gasoline for deferred shipment from Pennsylvania. Spot gasoline sold as low as 7.50 cents but by the end of the week the minimum of the market had moved up 0.375-cent from this point.

Speculative gasoline in the hands of brokers was the dominating factor in middle western markets, particularly in the Chicago district. As against the general quotation of 7.50 cents for U. S. Motor f.o.b. group 3 made by refiners, resale agents offered this grade of gasoline at 7 to 7.25 cents. Spot buying fell off materially, largely because of inclement weather conditions, but contract shipments were said to have held up exceptionally well.

Seaboard gasoline markets made very little progress, although the retail price situation on the west coast was in a slightly better position, according to reports.

Slight downward revisions of fuel oil prices were noted in middle western markets and also in the Pennsylvania field. Demand for this commodity was virtually at a standstill. Bunker oil prices on the eastern seaboard and also at the Gulf advanced 10 cents per barrel with trade reports indicating that a large reduction in stocks over the past few weeks had made possible the advance in prices.

Kerosene demand was relatively light in all districts with the exception of isolated sections of the Mid-Continent. Prices were unchanged.

Movement of lubricating oils against contracts was sufficiently heavy to prevent any surplus offerings disturbing spot markets.

Gasoline Advance Halted in Chicago

Staff Special
CHICAGO, April 19

SPOT tank car gasoline prices, which have advanced approximately 1.50 cents in the past month and a half, were at a standstill in the Chicago resale market in the week ended April 19.

There were a number of reasons given by the trade for this reaction in tank car prices, but the majority said it was due to the light demand from jobbers. They said that most jobbers had purchased all the gasoline they could at the low prices, which prevailed prior to and immediately following the tank wagon and crude advances of April 10 and 12, and due to rainy weather the past week consumption had fallen off. It was estimated that there would have to be several days of excellent motoring weather before spot buying would become much better.

Another important factor in the spot tank car market last week were the carlot marketers who had purchased gasoline for April shipment prior to the tank wagon advance. These sellers, who were long varying amounts of U. S. Motor, were in a position to dominate the spot market, due to the light demand and the fact that refiners were asking higher prices.

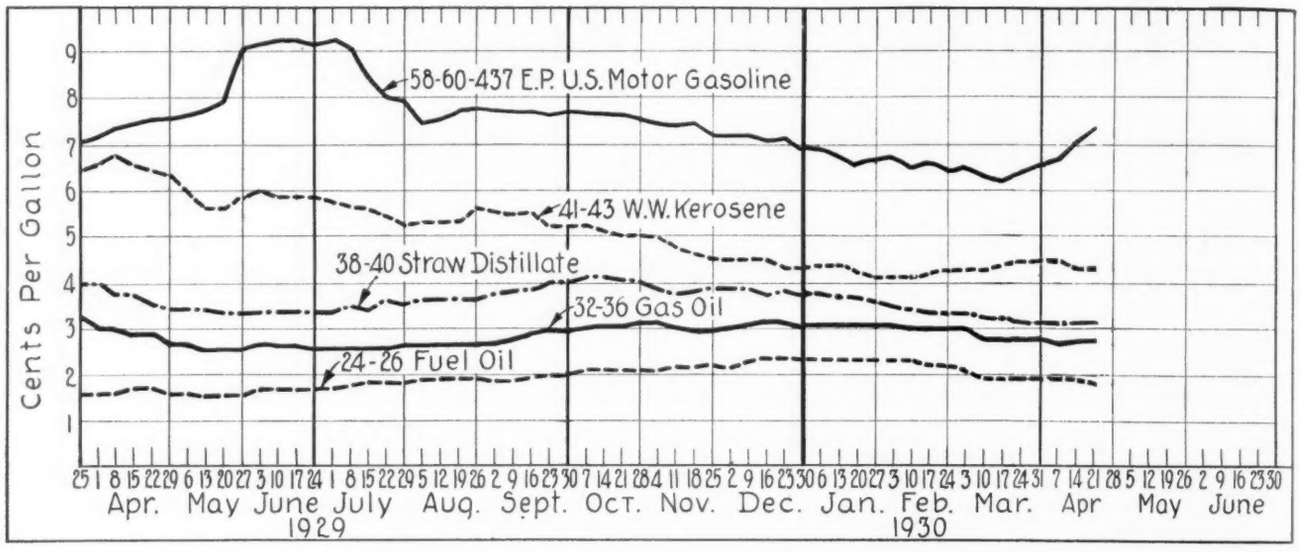
The bulk of this gasoline had been purchased at prices ranging from 6.375 to 6.75 cents and netted a good profit if disposed of at 0.25 to 0.375 cent under refiners' spot prices. Apparently the bulk of business done last week was placed with these marketers and most of the sales reported were at 7.125 to 7.25 cents. Other sales were reported at 7 cents and some as high as 7.50 cents. Many of the trade were of the opinion that most of this "hold over" gasoline would be off the market before the middle of next week and that spot prices would move higher.

Marketers reported it was hard to buy for resale in either Oklahoma or north Texas at under 7.25 cents and said that many refiners were quoting 7.50 cents. In most cases, it was reported, refiners wanted shipping instructions as soon as possible and would not sell for future shipment. This indicated, marketers said, that as soon as the long gasoline was disposed of, the market probably would be at a low of 7.375 cents.

Practically all refiners reported quoting U. S. Motor to jobbers at 7.50 cents. A number of them said they were well sold up for the present and were not pushing spot business. Buyers reported there was practically no differential territory gasoline available for spot shipment.

A disturbing factor in the spot market was the presence of a considerable quantity of off specification gasoline being offered for prompt shipment. This gasoline was being sold

Current Prices of Principal Mid-Continent Refined Products


58-60-437 E.P. U.S. Motor Gasoline
41-43 W.W. Kerosene
38-40 Straw Distillate
32-36 Gas Oil
24-26 Fuel Oil
Cents Per Gallon
Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr May June
1929
1930

Prices shown are in Group 3 basis and extended to date shown in Refinery Market Tables Section of this issue

as 58-60, 437 e.p. gasoline, as it was said not to meet the doctor test and did not have the distillation range of good U. S. Motor. Sales of this gasoline were reported as low as 6.75 cents, both to marketers and to jobbers.

Sellers and buyers already were taking an interest in gasoline for May delivery and a number of sales and offers were reported. Several marketers reported they had been offered U. S. Motor for resale, for shipment over May, at 7.25 and 7.50 cents. One market said he had bought a small quantity of Motor for May shipment at 7.50 cents and that the same refiner later refused to sell any more at this figure. Many refiners reported they were not offering any gasoline for future shipment, but said if they did it would be at prices higher than those prevailing for spot shipment. Many of the Chicago trade were expecting another crude and tank wagon advance and were uncertain what prices to quote for future shipment.

Kerosenes apparently were unaffected by the crude price changes. Sales were reportd as fairly active by several sellers, while others said they were having a hard time moving material. The bulk of sales of 41-43 w.w. still were reported at 4.375 to 4.50 cents.

Both gas and fuel oils were offered at lower prices last week, while demand was only fair in most quarters. Several sellers, however, reported a steady call for these products. A number of the trade said they thought prices of the heavy oils already were close to mid-summer levels and that they did not expect to see prices go much if any lower.

Occasional periods of precipitation are likely over the Standard of Indiana territory next week, says the Chicago weather bureau. Temperatures probably will stay close to the seasonal normal.

Late Market Changes

LOUISVILLE.—On April 22 Standard Oil Co. of Kentucky advanced tank wagon and service station prices of gasoline 1 cent throughout its territory, including Kentucky, Georgia, Florida, Alabama and Mississippi.

* * *

CLEVELAND.—On April 23 Standard Oil Co. of Ohio reduced tank wagon price of gasoline 1 cent, and service station price 2 cents, through Columbiana county and in Saline township of Jefferson county, making tank wagon and service station 18 cents, including 4 cent tax, in both territories. It also reduced prices at Alliance the same amount, making new prices 18 cents for both tank wagon and service station.

On April 22 it cut tank wagon in sections of Akron 2 cents, and service station 3 cents, making new prices 17 cents.

Shipments From Southern California

LOS ANGELES, April 16.—Bulk petroleum shipments from Southern California ports for week ended April 12, were as follows:

Destination	Crude	Gasoline	Diesel	Kerosene	Fuel	Gas-Oil	Total
Pacific For.	139,850	174,161	134,375	278,872	534,307	3,469	1,265,034
Atlantic Dom.	.....	498,133	.....	93,375	.....	.....	591,508
Atlantic For.	.....	78,023	.....	.....	.....	.....	78,023
Total	139,850	750,317	134,375	372,247	534,307	3,469	1,934,565

Prices 10 Years Ago
April 19, 1920

	Oklahoma	Penna.
58-60 U. S. Motor	23.00c	24.50c
80-84 Natural	18.00–19.00c	.....
Kerosene (41-43 Okla.; 47 w. w. Pa.)	11.25–12.00c	15.50–15.75c
Fuel Oil (24-26 Okla.; 38-40 Pa.)	$2.90–$3.25	13.00c
Crude (Okla. 35-35.9)	$3.50	$6.10
Chicago tank wagon		25.00c

Prices A Year Ago
April 22, 1929

	Oklahoma	Penna.
58-60 U. S. Motor	7.5125c	9.00–9.75c
Grade A Natural	7.875c	.....
Kerosene (Okla. 41-43; Pa., 47 w. w.)	6.50c	8.50–8.75c
Fuel Oil (Okla. 24-26; Pa. 36-40)	$0.65–$0.70	5.25–5.75c
Crude (Okla. 35-35.9)	$1.17	$4.00
Chicago tank wagon		14.00c

Mid-Continent Refinery Markets

Natural Gasoline Follows U. S. Motor Up

Staff Special
TULSA, April 19

THE Mid-Continent gasoline market at the end of the week of April 14 to 19 was in a good position as far as prices were concerned. Spot buying was comparatively light and contract shipments were somewhat slower after an active movement the first half of the week while the market was settling following the crude and tank wagon advances.

Natural gasolines were in a better position with goods scarce. kerosene demand was steady in some quarters and active in others, while other oils were quiet in all districts.

The bulk of the gasoline business the past week was done by marketers who had bought gasoline prior to the advance in crude and tank wagon prices, and by refiners who had contracts which specified prices for the current week would be based on some publication or publications of the previous week. A comparatively small amount of buying was done for spot shipment at the new price levels instituted after the advances, but due to the fact that contract shipments were heavy with all refiners, and also because the smaller refiners had very little storage and were not forced into the pot market to any great extent prices were holding well in all districts.

Reports April 19 indicated that most of the gasoline which had been bought before the advances had been cleaned up. At the same time, however, several refiners reported a slowing up on contract shipments. This would be expected in view of the fact that next week's purchases will be based on this week's publications, and whereas this week's shipments moved at prices considerably under 7 cents a gallon for U. S. Motor, next week's shipments will be invoiced at prices above the 7 cent mark.

The question which apparently confronts refiners at present is "How long will the jobber be able to remain out of the spot market?" If weather conditions remain good next week there probably will be an increase in spot buying. Inclement weather generally, however, will cut down consumption and with contract shipments as heavy as they have been, along with the spot buying from marketers, jobbers may be able to stay out of the market for many days, with the possible result that prices will soften somewhat before May 1.

There is another cloud hovering over the Mid-Continent, and particularly Louisiana and north Texas. The Export Petroleum Association had not advanced its posted prices at the Gulf up to the time this was written. The prices are virtually the same as those obtained now for domestic shipments. The buyers for the members of the association cannot afford to pay the present prices for gasolines plus the freight, when the posted prices are at their present levels, and unless those posted prices are advanced there is a possibility there will not be the usual amount of export gasoline bought in the Mid-Continent for shipment during May.

Refiners having export orders, however, obtain prices based on posted prices at the Gulf. It may be possible that the association will not advance its quotations until almost the end of the month in which event virtually all the gasoline bought for April will have been shipped. If the association does advance its prices, however, the move will bring virtually as much optimism to the trade as did the crude and tank wagon advances.

Several factors have aided the natural gasoline market. The weather has been one of the most important factors as far as the lower grades were concerned. Unusually warm weather has cut down production of both grades BB and C and with demand good for those grades since there has been a differential in price between the lower grades and grade AA.

The grade AA demand meanwhile was good with at least one large manufacturer buying for storage, and with considerable gasoline bought for over the month shipment to the Gulf. One company April 18 loaded a cargo of 3,000,000 gallons of gasoline for export shipment, and another company was understood to have taken an order which will necessitate considerable buying before the shipment is lifted at the Gulf in May. Indications at the present are that grade AA will remain within 0.50 to 0.75-cent of the going market for U. S. Motor, and that the lower grades will be within 0.25 cent of grade AA.

Kerosene demand was exceptionally good with Kansas refiners. Several of them had to buy on the outside to take care of their regular accounts. Some of this business was placed with refiners located in the northern part of Oklahoma, but Kansas refiners make an exceptionally good grade of kerosene, and usually they are particular when buying on the outside. This has kept a few Oklahoma refiners from sharing in their business. The demand meanwhile for Oklahoma kerosene was steady and no changes were noted in prices.

Louisiana and Arkansas, which were the retarding factors when kerosenes started upward several weeks ago, apparently have worked off their surplus stocks through increased domestic and exports business, and now report goods comparatively scarce. And with goods scarce in those two districts the north Texas refiners have enjoyed an improved demand for their product.

Distillates were virtually out of the picture, but gas oils showed some improvement ir demand, practicularly for cracking purposes.

Fuel oils continued to show considerable weakness, particularly the higher gravities, and prices declined during the week from 2.5 to 10 cents a barrel.

Many of the trade predict, however, another crude advance in May and if such should be the case there probably will be an increased demand for fuel oil for cracking purposes with the result the price trend will be reversed.

Neutral oils were at unchanged price levels. Compounders reported considerable difficulty obtaining the standard grades for blending, particularly for spot shipment.

Bright stocks were unchanged as far as prices were concerned, with demand only fair.

Wax was in light demand at unchanged price levels.

Venezuelan Crude Advancing

NEW YORK, April 19.—Venezuelan crude oil prices were higher in the opinion of some of the trade compared with prices of two weeks ago. Spot demand for this oil has been light although the movement against contracts has been heavy.

Suppliers' ideas of prices for Venezuelan crude ranged from $0.75 to $0.85 per barrel, f.o.b. deepwater in the Lake Maracaibo district. Two weeks ago the general opinion of the market was $0.75 per barrel.

Two spot cargoes were reported sold to a United States account the past week although the report could not be confirmed. It was reported the price was under $0.85 per barrel.

Suppliers continued to indicate a higher market in view of the heavy contract movement to the United States and Continental Europe, and because of the curtailment program effective in the principal Venezuelan fields.

Gulf Lubes Firmer

HOUSTON, April 21.—Spring motoring demand has helped the Gulf Coastal lubricant market. Prices are unchanged but firmer at recently quoted levels. Domestic jobbers are taking out increased quantities in tank car shipments.

Comparative Prices of 58-60 U. S. Motor Gasoline, 437 E. P., Group 3 and Point of Origin, to Jobbers Only

In Effect April 21

	Price F.O.B. Group 3		*Price F.O.B. Point of Origin*		*If for Particular Destination*
Oklahoma	7.4107	(Wt. Avg.)	7.4107	(Wt. Avg.)	
Kansas	7.50				S. O. Neb. & Indiana Territory, etc.
Kansas			No sales reported		Kansas only.
North Texas	7.25–7.50		7.25–7.50		
West Texas	7.50		7.50		
Louisiana-Arkansas	7.25–7.50				Michigan, Ohio and Indiana.
Louisiana-Arkansas			7.75		State or differential haul.
Indiana-Illinois	7.50		*		S. O. Indiana territory except Detroit and vicinity. For Ohio on delivered basis only.

*Shipments made from E. Chicago, Ind., and Wood River, Ill., according to conditions and freight rates; no prices F.O.B. point of origin can be given.

Chicago Resale Market

CHICAGO, April 19

SALES of U. S. Motor gasoline generally were at 7.125 to 7.25 cents in the Chicago market the past week. The bulk of this gasoline was reported as material purchased by marketers prior to the tank wagon advance of April 12. Some sales also were reported at 7 and 7.50 cents. Several marketers reported being offered U. S. Motor for May shipment at 7.25 and 7.50 cents.

Following prices represent majority of sales made on Group 3 freight basis, although shipments may originate in other refining districts such as north and West Texas, Arkansas, Louisiana, Indiana, Illinois, Kentucky, etc.

	Prices Apr. 21	Prices Apr. 14	Prices Apr. 7
58-60 U. S. Motor, 437 e.p.	7.125– 7.25	†7.00 – 7.50	6.50 – 6.75
60-62 437 e.p. gasoline	7.25 – 7.50	†7.125– 7.50	6.625– 6.75
60-62 400 e.p. gasoline	7.50 – 7.75	†7.375– 7.75	6.75 – 6.875
64-66 375 e.p. gasoline	7.75 – 8.00	†7.75 – 7.875	7.25 – 7.50
68-70 350-360 e.p. gasoline	8.00 – 8.25	†8.00 – 8.25	7.50 – 7.75
*Domestic Aviation Gasoline	9.50 – 9.75	9.50 – 9.75	8.75 – 9.50
41-43 w.w. kerosene	4.375– 4.50	4.375– 4.50	4.25 – 4.50
42-44 w.w. kerosene	4.625– 4.75	4.625– 4.75	4.50 – 4.75
38-40 straw distillate	3.00 – 3.125	3.00 – 3.125	3.00 – 3.125
32-36 ordinary dark gas oil	2.375– 2.625	2.50 – 2.625	2.50 – 2.625
32-36 dark zero gas oil	2.50 – 2.75	2.625– 2.75	2.625– 2.75
32-36 straw zero gas oil	2.625– 2.75	2.75 – 2.875	2.75 – 2.875
28-30 zero fuel oil (per bbl.)	$0.925–$0.95	$0.95 –$1.00	$0.95 –$1.00
28-30 fuel oil (per bbl.)	$0.90 –$0.95	$0.95 –$1.00	$0.95 –$1.00
24-26 fuel oil (per bbl.)	$0.75 –$0.80	$0.775–$0.825	$0.775–$0.825
18-22 fuel oil, low sulfur (per bbl.)	$0.625–$0.675	$0.65 –$0.70	$0.675–$0.725
18-22 fuel oil, high sulfur zero (per bbl.)	$0.625–$0.65	$0.625–$0.675	$0.65 –$0.70

*Prices are based on U. S. Gov't. specifications or better. Present Gov't. specifications require distillation range of 5% recovery at not more than 167° F., and not less than 122° F.; 50% recovery at 221°.; 90% at 311°; 96% at 347°; end point 374° F. Gasoline of fighting grade specifications in some instances sells at a premium over domestic aviation grade. Prices represent majority of quotations.

†Represents both sales and quotations.

Weighted Average Prices

OKLAHOMA

	Apr. 21		Apr. 14		Apr. 7	
	No. of cars	Price	No. of cars	Price	No. of cars	Price
58-60 U. S. Motor, 437 e.p.	7	7.4107	14	7 0714	9	6.7361
60-62 437 e.p. gasoline	2	7.5625	1	7.5000	5	6.7500
60-62 400 e.p. gasoline	No sales reported		1	7.5000	1	7.5000
64-66 375 e.p. gasoline	No sales reported		No sales reported		2	7.3750
*58-60 437 e.p. gasoline	..	7.25–7.50	..	7.25–7.50	..	6.50–6.75

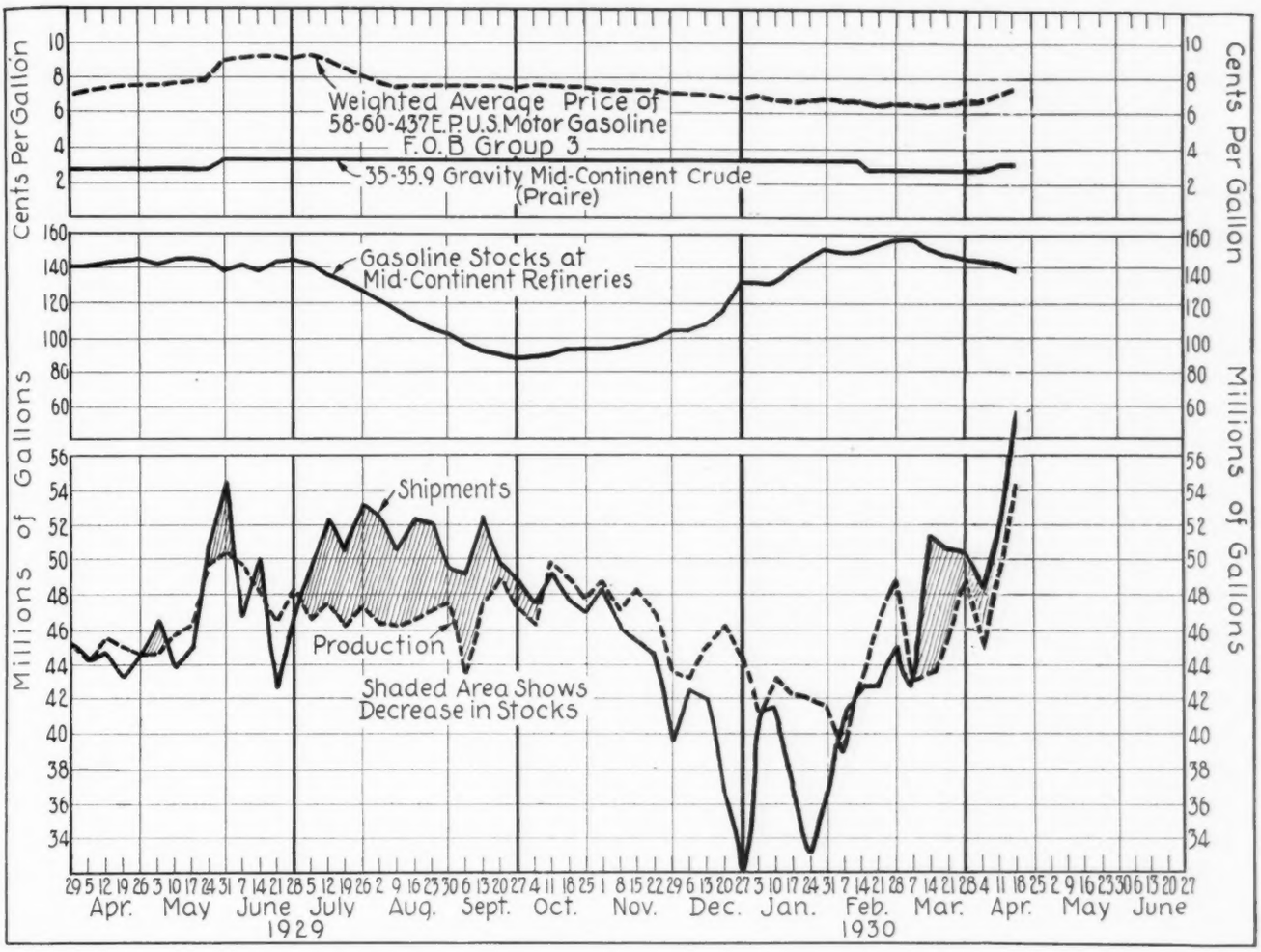
KANSAS

	Apr. 21		Apr. 14		Apr. 7	
	No. of cars	Price	No. of cars	Price	No. of Cars	Price
58-60 U. S. Motor, 437 e.p.	No sales reported		1	7.7500	1	7.0000

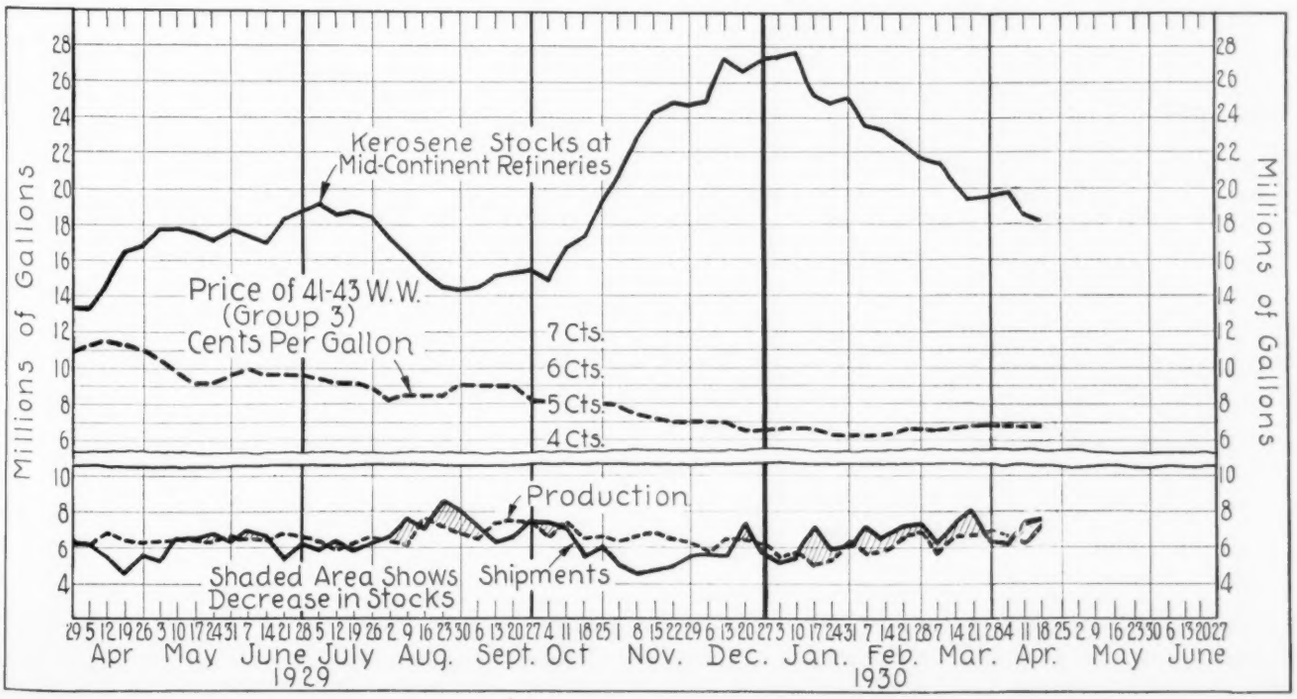
*Full U. S. Motor specifications not guaranteed. Prices represent both quotations and sales.

Barometer of Mid-Continent Refinery Market—Week Ending April 18

Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 93 Plants to National Petroleum News


Cents Per Gallon
Weighted Average Price of 58-60-437 E.P. U.S. Motor Gasoline F.O.B Group 3
35-35.9 Gravity Mid-Continent Crude (Praire)
Gasoline Stocks at Mid-Continent Refineries
Millions of Gallons
Shipments
Production
Shaded Area Shows Decrease in Stocks
Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June
1929
1930

Prices shown above are extended to date shown in Refinery Market and Crude tables in Market section of this issue and stocks, shipments and Production are extended to date as shown in the table on page 98



Refinery Markets on Light Oils and Lubricants

Prices given below are in cents per gallon, except where $ is shown

(These Refinery Prices compiled in the OIL PRICE HANDBOOK for a whole year)

GASOLINE AND NAPHTHA

OKLAHOMA (F. o. b. Oklahoma refineries)

	Prices Apr. 21	Prices Apr. 14	Prices Apr. 7
48-50 450 e.p. naphtha	7.00 – 7.25	7.00 – 7.25	6.25 – 6.50
50-52 450 e.p. naphtha	7.125– 7.25	7.125– 7.25	6.25 – 6.50
56-58 450 e.p. gasoline	7.125– 7.25	7.125– 7.25	5.75 – 6.25
58-60 450 e.p. gasoline	7.25	7.25	5.75 – 6.25
64-66 390 e.p. gasoline	7.75 – 8.00	7.75 – 8.00	6.75 – 7.25
68-70 350-360 e.p. gasoline	8.75	8.25 – 8.50	7.75
‡Domestic Aviation Gasoline	9.50 –10.50	9.50 –10.50	8.50 – 9.50

‡Prices based on U. S. Gov't. specifications or better. Present Gov't. specifications require distillation range of 5% recovery at not more than 167° F., and not less than 122° F.; 50% rec. at 221°; 90% at 311°; 96% at 347°; end point, 374°F. Fighting grade in some instances sells at a premium over domestic aviation grade.

PENNSYLVANIA (F. o. b. Western Pennsylvania refineries)

52-54 Naphtha	7.25 – 7.375	7.25 – 7.375	7.25 – 7.37
54-56 Naphtha	7.25 – 7.50	7.25 – 7.50	7.25 – 7.50
58-60 U.S. Motor 437 e.p.	7.875– 8.25	7.50 – 8.25	7.50 – 7.75
60-62 400-410 e.p. gasoline	8.00 – 8.50	8.00 – 8.50	7.75 – 8.25
64-66 390 e.p. gasoline	8.25 – 8.50	8.25 – 8.50	8.00 – 8.50
68-70 350-360 e.p.	8.50 – 9.00	8.50 – 9.00	8.50 – 9.00

OHIO (Quotations of S. O. Ohio. 4c state tax to be added.)

U. S. Motor Gasoline

Ohio, delivery at any point	10.50	10.50	10.00

KANSAS (F. o. b. refinery Kansas destination)

60-62 437 e.p. gasoline	7.875	7.875	7.25
60-62 400 e.p. gasoline	8.00	8.00	7.25 – 7.50
64-66 375 e.p. gasoline	8.25	8.25	7.50

NORTH TEXAS (F. o. b. North Texas refineries)

56-58 450 e.p. gasoline	7.00	7.00	6.00
58-60 450 e.p. gasoline	7.00 – 7.25	7.00 – 7.25	6.00
58-60 U.S. Motor 437 e.p.	**7.25 – 7.50	**7.00 – 7.50	6.375– 6.625
60-62 400 e.p. gasoline	7.50 – 7.75	7.50 – 7.75	6.75
64-66 390 e.p. gasoline	7.875– 8.00	7.875– 8.00	6.75 – 7.00
64-66 375 e.p. gasoline	8.00 – 8.25	8.00 – 8.25	7.50
68-70 350-360 e.p. gasoline	8.25 – 8.375	8.25 – 8.375	7.75

****WEST TEXAS** (F. o. b. West Texas refinery, for unrestricted shipment)

50-52 naphtha	7.00	7.00	5.75
58-60 437 e.p. gasoline	7.25	7.25	6.00 – 6.25
58-60 U.S. Motor 437 e.p. gasoline	7.50	7.50	6.50 – 6.75

NORTH LOUISIANA (N. La., Ark. and Miss. destination)

58-60 U.S. Motor 437 e. p.	7.75	7.50	7.00

ARKANSAS (Ark., N. La. and Miss. destination)

58-60 U.S. Motor 437 e.p.	7.75	7.50	7.00

CALIFORNIA (3c tax to be added to California gasoline prices if used in state.)

54-58 U.S. Motor 437 e.p.	7.00 – 7.75	7.00 – 7.75	7.50 – 8.25
54-58 U.S. Motor, for outside state shipment	6.50 – 7.25	6.25 – 6.75	6.50 – 7.00
58-61 375-400 e.p. gasoline	8.50 – 9.50	8.25 – 9.50	8.50 – 9.50
42-45 Engine Distillate 445-480 e.p.	7.00 – 8.00	7.00 – 8.25	7.00 – 8.50

NATURAL GASOLINE

(Note: End point of all grades, not over 375 F. Corrosion test adopted Oct. 1, 1927; A.S.T.M. Method D130-27T; doctor test, July 2, 1928.)

OKLAHOMA (F. o. b. Oklahoma refineries)

Grade AA, 80-87.9, 90% Recovery	6.50 – 6.625	6.50	5.75
Grade A, 72-79.9, 90% Recovery	6.50 – 6.625	6.50	5.75
Grade BB, 84-92, 85% Recovery	6.50 – 6.625	5.50 – 6.00	5.00
Grade B, 76-83.9, 85% Recovery	6.50 – 6.625	5.75 – 6.00	5.00
Grade C, 80-92, 78% Recovery	6.50 – 6.625	5.50 – 6.00	5.00

NORTH TEXAS (F. o. b. Breckenridge)

Grade AA, 80-87.9, 90% Recovery	6.50 – 6.625	6.50	5.75
Grade A, 72-79.9, 90% Recovery	6.50 – 6.625	6.50	5.75
Grade BB, 84-92, 85% Recovery	6.50 – 6.625	5.50 – 6.00	5.00
Grade B, 76-83.9, 85% Recovery	6.50 – 6.625	5.75 – 6.00	5.00
Grade C, 80-92, 78% Recovery	6.50 – 6.625	5.50 – 6.00	5.00

NORTH LOUISIANA (F. o. b. Monroe District)

	Prices Apr. 21	Prices Apr. 14	Prices Apr. 7
Grade AA	†7.00	†6.75	†6.25
Grade BB	†6.875	†6.00	†5.25
Grade C	†6.875	†6.00	†5.25

CALIFORNIA (F. o. b. California refineries)

75-85, 375-390 e.p. blend	7.00 – 8.00	7.00 – 8.00	7.00 – 8.00

BURNING OILS

PENNSYLVANIA (F. o. b. Western Pennsylvania refineries)

45 w.w. kerosene	5.625– 6.00	5.625– 6.00	5.75 – 6.125
46 w.w. kerosene	5.875– 6.25	5.875– 6.25	6.125– 6.50
47 w.w. kerosene	6.25 – 6.50	6.25 – 6.50	6.375– 6.75
300 mineral seal	6.75 – 7.00	6.75 – 7.00	6.75 – 7.00

OKLAHOMA (F. o. b. Oklahoma refineries)

41-43 w.w. kerosene	4.25 – 4.50	4.25 – 4.50	4.375– 4.50
42-44 w.w. kerosene	4.75 – 5.00	4.75 – 5.00	4.75 – 5.00

KANSAS (F. o. b. refinery Kansas destination)

41-43 w.w. kerosene	4.875– 5.00	4.875– 5.00	4.75 – 4.875
42-44 w.w. kerosene	5.00 – 5.25	5.00 – 5.25	5.00 – 5.25

NORTH TEXAS (F. o. b. North Texas refineries)

40-42 w.w. kerosene	4.125	4.125	4.125
41-43 w.w. kerosene	4.25	4.25	4.25 – 4.375

NORTH LOUISIANA (N. La., Ark. and Miss. destination)

41-43 w.w. kerosene	5.00	5.00	4.75
42-44 w.w. kerosene	5.25	5.25	5.00

ARKANSAS (Ark., N. La. and Miss. destination)

42-44 w.w. kerosene	5.25	5.25	5.00

CALIFORNIA (F. o. b. California refineries)

38-40 w.w. kerosene	4.00 – 5.00	3.75 – 4.50	4.25 – 5.00

NEUTRAL OIL

PENNSYLVANIA (F. o. b. Western Pennsylvania refineries)

Vis.	(Viscosity at 70° F.)		
200 No. 3 Assoc. Filt.	25.00 –26.00	25.00 –26.00	25.00 –26.00
180 No. 3 Assoc. Filt.	21.00 –22.00	21.00 –22.00	21.00 –22.00
150 No. 3 Assoc. Filt.	15.25 –16.50	15.00 –16.50	15.00 –16.50
	(Non Viscous)		
34 Grav. 330-340 Flash	7.00 – 7.50	7.00 – 7.50	7.00 – 7.50

****OKLAHOMA** (F. o. b. Oklahoma refineries)

Vis.	Color	(Viscosity at 100° F.)		
100	No. 2	6.00 – 7.50	6.00 – 7.50	6.00 – 7.50
150	No. 3	8.00 – 9.00	8.00 – 9.00	8.00 – 9.00
150	No. 4	7.00 – 8.50	7.00 – 8.50	7.00 – 8.50
180	No. 3	9.00 –10.50	9.00 –10.50	9.00 –10.50
180	No. 4	9.00 –10.00	9.00 –10.00	9.00 –10.00
180	No. 5	8.50 – 9.50	8.50 – 9.50	8.50 – 9.50
200	No. 3	12.00	12.00	12.00
200	No. 4	10.00 –11.50	10.00 –11.50	10.00 –11.50
200	No. 5	10.50 –11.00	9.50 –11.00	9.50 –11.00
220	No. 3	12.50 –13.50	12.50 –13.50	12.50 –13.50
220	No. 4	12.00 –12.50	12.00 –12.50	12.00 –12.50
220	No. 5	11.00 –12.00	11.00 –12.00	11.00 –12.00
240	No. 3	13.50 –15.50	13.50 –15.50	13.50 –15.50
240	No. 4	12.50 –14.50	12.50 –14.50	12.50 –14.50
240	No. 5	12.00 –14.00	12.00 –14.00	12.00 –14.00
280	No. 3	17.00 –18.00	17.00 –18.00	17.00 –18.00
280	No. 4	15.00 –17.00	15.00 –17.00	15.00 –17.00
280	No. 5	14.00 –15.50	14.00 –15.50	14.00 –15.50

†Prices nominal ††Only one refiner quoting *Quotations only **Represents Both Sales and Quotations.

Refinery Markets Wax, Lubricants, Heavy Oil

Prices given below are in cents per gallon, except where $ is shown

(For quick reference to Refinery Prices, get the OIL PRICE HANDBOOK, published annually)

GULF COASTAL (F. o. b. Gulf Coastal refineries)

Vis.	Color	Prices Apr. 21	Prices Apr. 14	Prices Apr. 7
		(Viscosity at 100° F., pour test 0)		
100	No. 2 Pale	6.50 – 7.00	6.50 – 7.00	6.50 – 7.00
200	No. 3 Pale	9.50 – 9.75	9.50 – 9.75	9.50 – 9.75
300	No. 3 Pale	10.75 –11.00	10.75 –11.00	10.75 –11.00
500	No. 3½ Pale	12.00 –12.25	12.00 –12.25	12.00 –12.25
750	No. 4 Pale	13.50 –13.75	13.50 –13.75	13.50 –13.75
1200	No. 5 Pale	16.00 –16.50	16.00 –16.50	16.00 –16.50
200	No. 5½ Red Oil	8.75 – 9.00	8.75 – 9.00	8.75 – 9.00
300	No. 5½ Red Oil	10.00 –10.25	10.00 –10.25	10.00 –10.25
500	No. 6 Red Oil	11.25 –11.50	11.25 –11.50	11.25 –11.50
750	No. 6 Red Oil	12.75 –13.00	12.75 –13.00	12.75 –13.00
1200	No. 5-6 Red Oil	15.00 –15.25	15.00 –15.25	15.00 –15.25

‡**CALIFORNIA** (F. o. b. California refineries)

Vis.	Color	(Viscosity at 100° F.)		
100	No. 3	9.50 –10.00	9.50 –10.00	9.50 –10.00
200	No. 3	11.50	11.50	11.50
300	No. 3	13.00	13.00	13.00
450	No. 3	15.50	15.50	15.50
550	No. 3	16.50	16.50	16.50
600	No. 3	17.00	17.00	17.00
200	No. 5	11.00	11.00	11.00
300	No. 5	12.00	12.00	12.00
400	No. 5	14.00	14.00	14.00
500	No. 5	15.00	15.00	15.00
600	No. 5	16.00	16.00	16.00
700	No. 7	18.00	18.00	18.00

‡Neutral oils not manufactured commercially in California.

CYLINDER STOCKS

****OKLAHOMA** (F. o. b. Oklahoma refineries)

190-200 Vis. D at 210° Brt. St.	41.00 –42.00	41.00 –42.00	41.00 –42.00
150-160 Vis. D at 210° Brt. St., 15-20 cold test	37.00	37.00	37.00
150-160 Vis. D Brt. Stock, 25-45 cold test	36.00 –36.50	36.00 –36.50	36.00 –36.50
150-160 Vis. E 210° Brt. St.	34.00 –35.00	35.00 –36.00	35.00 –36.00
600 St. Ref. Olive Green	9.00 –10.00	9.00 –10.00	9.00 –10.00
600 St. Ref. Dark Green	9.00	9.00	9.00
Black Oil	5.00	5.00	5.00

PENNSYLVANIA (F. o. b. Western Penna. refineries) (A.S.T.M. Tests)

600 Steam Refined, filterable	23.50 –24.50	23.50 –24.50	23.50 –24.50
650 Steam Refined	29.00 –31.00	29.00 –31.00	29.50 –31.00
600 Flash	31.00 –33.00	31.00 –33.00	31.00 –33.00
630 Flash	35.00 –36.50	35.00 –36.50	35.00 –36.50
600 Warren E	29.50 –30.00	29.50 –30.00	29.50 –30.00
600 Oil City E	29.00 –29.50	29.00 –29.50	28.50 –29.50
600 D Filtered	34.00 –35.00	34.50 –35.00	34.50 –35.00
Cold Test Stock, 40-50 p. p., 140-150 vis. at 210° 540-550 flash, No. 8 color	39.00 –41.00	39.50 –41.00	39.50 –41.00
40-50 p.p., 140-150 vis. at 210°, 540-550 flash, No. 6-6½ color diluted	38.50 –40.00	38.50 –40.00	38.50 –40.00

WAX

PENNSYLVANIA (Per pound, F. o. b. New York)

122-124 white crude scale, a.m.p.	2.625	2.625– 2.75	2.625– 2.75
124-126 white crude scale, a.m.p.	2.625	2.625– 2.75	2.625– 2.75

****OKLAHOMA** (Per pound in barrels; in a few instances, per pound in burlap bags; F. o. b. Oklahoma refineries)

124-126 White Crude Scale, a.m.p.	2.375– 2.50	2.375– 2.50	2.375– 2.50

DISTILLATE, GAS AND FUEL OIL

PENNSYLVANIA (For outside Pittsburgh district)

36-40 fuel oil	4.00 – 4.375	4.00 – 4.50	4.125– 4.50
30-34 fuel oil	4.00 – 4.125	4.00 – 4.25	4.125– 4.375
28-32 fuel oil	4.00 – 4.125	4.00 – 4.25	4.125– 4.375

†Prices nominal ††Only one refiner quoting *Quotations only

OKLAHOMA (F. o. b. Oklahoma refineries)

	Prices Apr. 21	Prices Apr. 14	Prices Apr. 7
38-40 straw distillate	3.00 – 3.25	3.00 – 3.25	3.00 – 3.25
36-38 straw distillate	2.875	2.875	2.875
32-36 straw gas oil	2.50 – 2.75	2.50 – 2.75	2.50 – 2.75
32-36 straw gas oil zero	3.00	3.00	3.00
32-36 dark gas oil	2.375– 2.50	2.375– 2.50	2.375– 2.50
32-36 dark gas oil zero	2.50 – 2.75	2.50 – 2.75	2.50 – 2.75
28-30 zero fuel oil (per bbl.)	$0.90 – 0.95	$1.05 – 1.10	$1.05 – 1.10
28-30 fuel oil (per bbl.)	$0.875– 0.90	$0.95 – 1.00	$0.95 – 1.00
26-28 fuel oil (per bbl.)	$0.825– 0.875	$0.85 – 0.95	$0.85 – 0.95
24-26 fuel oil (per bbl.)	$0.775– 0.80	$0.80 – 0.85	$0.80 – 0.85
22-26 fuel oil (per bbl.)	$0.70 – 0.75	$0.725– 0.775	$0.725– 0.775
18-22 fuel oil (per bbl.)	$0.625– 0.675	$0.625– 0.675	$0.625– 0.675
16-20 fuel oil (per bbl.)	$0.55 – 0.60	$0.55 – 0.60	$0.55 – 0.60
14-16 fuel oil (per bbl.)	$0.50 – 0.60	$0.50 – 0.60	$0.50 – 0.60

KANSAS (F. o. b. refinery Kansas destination)

38-40 straw distillate	3.50 – 3.75	3.50 – 3.75	3.50 – 3.75
36-38 straw distillate	3.25	3.25	3.25
32-36 straw gas oil	3.25 – 3.50	3.25 – 3.50	3.25 – 3.50
18-22 fuel oil (per bbl.)	$0.80 – 0.85	$0.80 – 0.85	$0.80 – 0.85
10-14 fuel oil (per bbl.)	$0.725– 0.775	$0.725– 0.775	$0.725– 0.775

NORTH TEXAS (F. o. b. North Texas refineries)

38-40 straw distillate	3.00 – 3.25	3.00 – 3.25	3.00 – 3.25
38-40 p.w. treated distillate	3.25	3.25	3.25
32-36 gas oil, cracked	2.50	2.50	2.50
32-36 St. reduced gas oil	2.375– 2.50	2.25 – 2.50	2.25 – 2.50
24-26 fuel oil (per bbl.)	$0.60 – 0.65	$0.60 – 0.65	$0.60 – 0.65
20-24 fuel oil (per bbl.)	$0.55	$0.55	$0.55
18-22 fuel oil (per bbl.)	$0.50	$0.50	$0.50

****WEST TEXAS** (F. o. b. West Texas refinery, for unrestricted shipment)

34-38 gas oil	2.50 – 2.75	2.50 – 2.75	2.50 – 2.75
30-32 gas oil	2.25 – 2.50	2.25 – 2.50	2.25 – 2.50
28-30 zero gas oil	2.50 – 2.875	2.50 – 2.875	2.50 – 2.875
18-22 fuel oil (per bbl.)	$0.60 – 0.80	$0.60 – 0.80	$0.60 – 0.80

NORTH LOUISIANA (N. La., Ark. and Miss. destination)

32-36 gas oil, dark	3.00	3.00	3.00
30-32 gas oil, straw	3.00	3.00	3.00
14-16 fuel oil (per bbl.)	$0.75 – 0.85	$0.75 – 0.85	$0.75 – 0.85

ARKANSAS (Ark., N. La. and Miss. destination)

30-32 gas oil, straw	3.00	3.00	3.00
32-36 dark gas oil	3.00	3.00	3.00
28-30 gas oil	2.75	2.75	2.75
20-24 fuel oil (per bbl.)	$0.95	$0.95	$0.95
9-12 fuel oil (per bbl.)	$0.75	$0.75	$0.75
Black oil	3.25	3.25	3.25

CALIFORNIA (F. o. b. San Joaquin Valley. Nominal pipe line charge to San Francisco 24c per bbl. more and to San Pedro 20c per bbl. more.)

14-18 fuel oil (per bbl.)	$0.50 –$0.65	$0.45 –$0.60	$0.50 –$0.65
14-18 Bunker oil (per bbl.)	$0.70 –$0.75	$0.70 –$0.75	$0.70 –$0.75
30-34 gas oil (per bbl.)	$0.80 –$0.95	$0.70 –$0.90	$0.70 –$0.90
27 Plus Diesel oil (per bbl.)	$0.80 –$0.95	$0.70 –$0.90	$0.70 –$0.90

PETROLATUMS

PENNSYLVANIA (Per pound, in barrels, carload lots, f. o. b. refinery. In tank cars ⅛c to ¾c per pound less.) Two refiners quoting.

Snow White	8.25 – 8.50	8.25 – 8.50	8.25 – 8.50
Lily White	7.25 – 7.50	7.25 – 7.50	7.25 – 7.50
Cream White	6.25 – 6.50	6.25 – 6.50	6.25 – 6.50
Light Amber	3.50 – 3.625	3.50 – 3.625	3.50 – 3.625
Amber	3.25 – 3.375	3.25 – 3.375	3.25 – 3.375
Red	3.00	3.00	3.00

PETROLEUM COKE

****OKLAHOMA** (F. o. b. Oklahoma refineries)

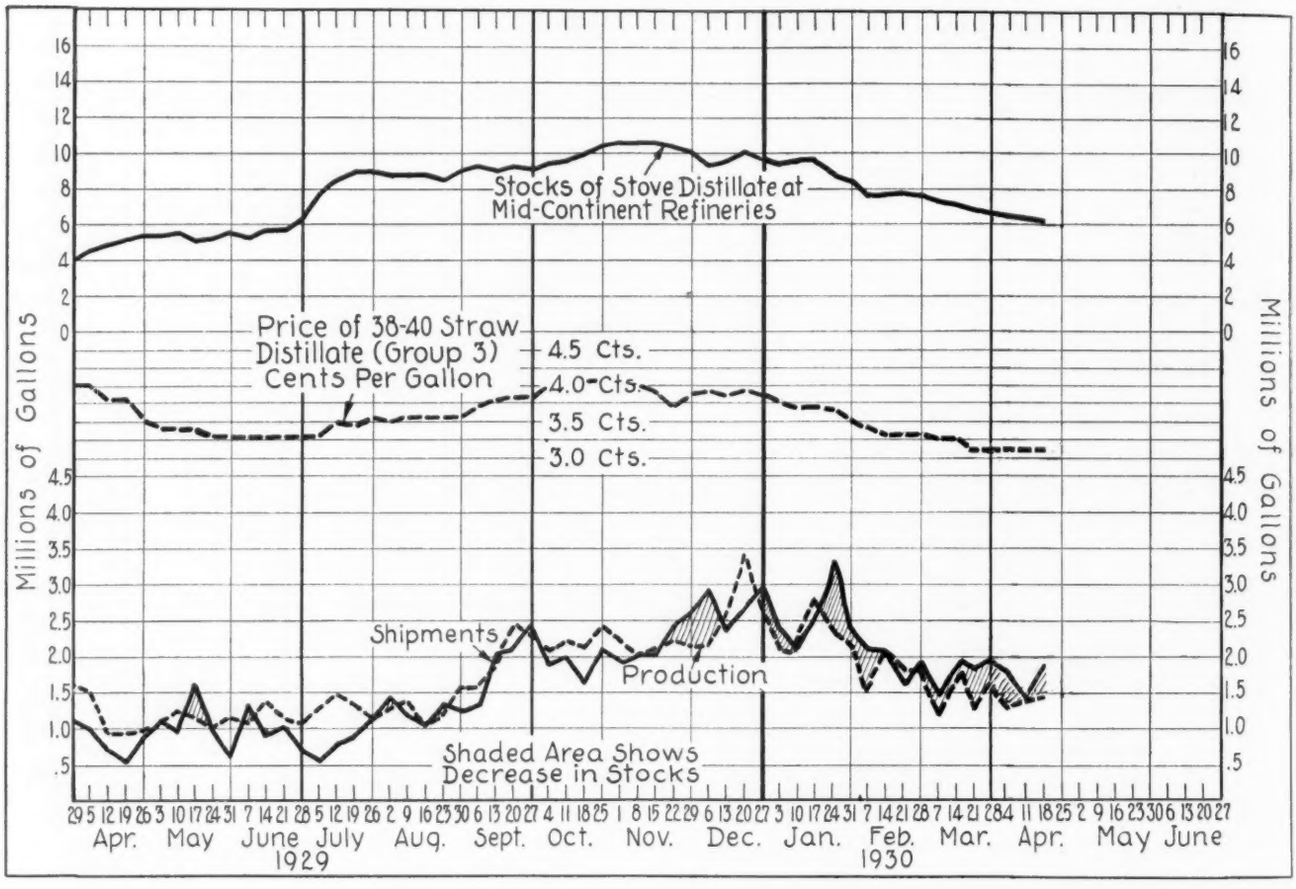
(Per ton in car lots)

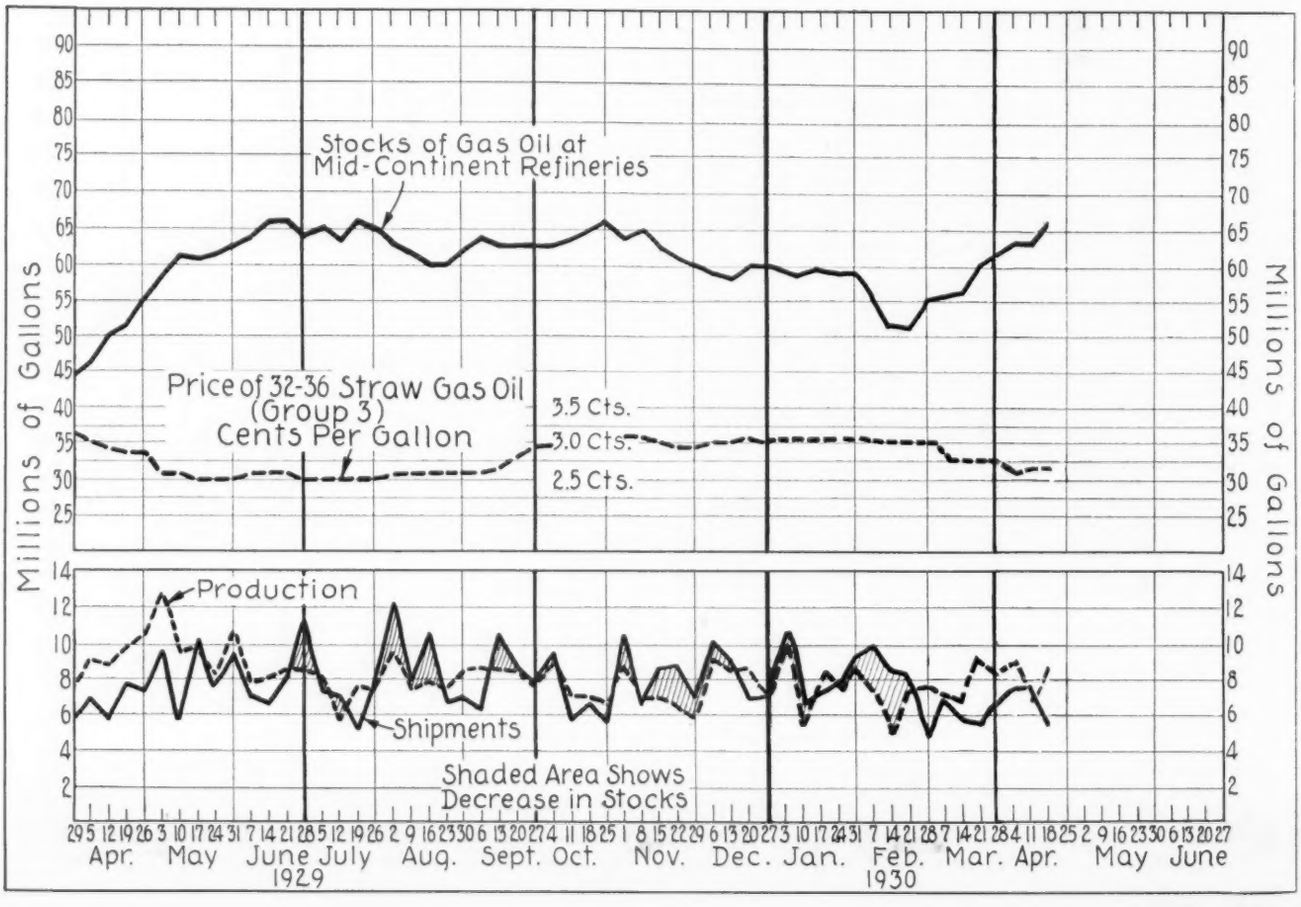
Lump	$4.50 – 5.00	$4.50 – 5.00	$4.50 – 5.00
Still run	$3.00	$3.00	$3.00
Breeze	$2.00	$2.00	$2.00

******Represents Both Sales and Quotations.

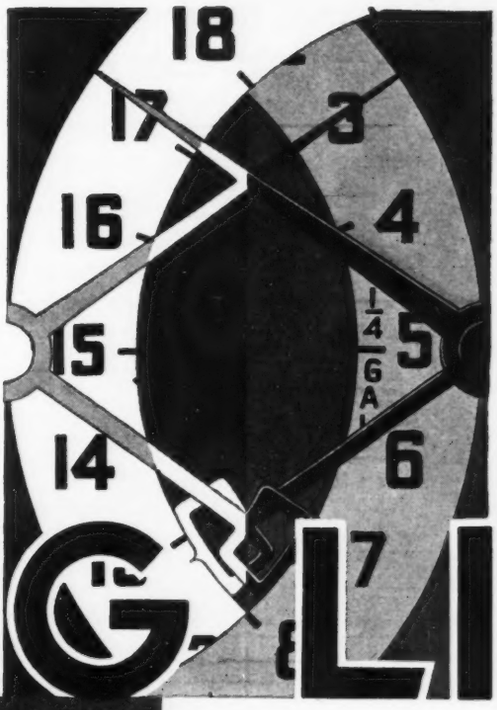
Barometer of Mid-Continent Refinery Market—Week Ending April 18

Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 93 Plants to National Petroleum News

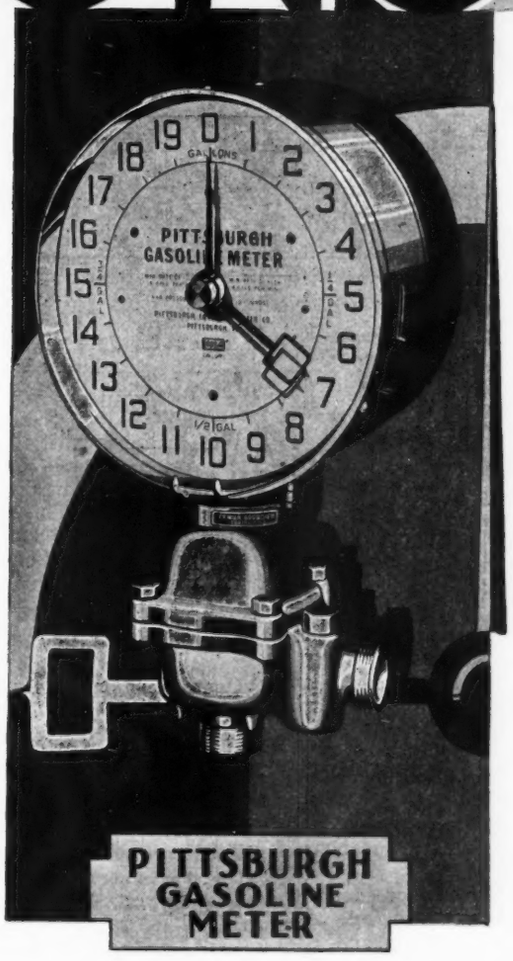

Millions of Gallons
Stocks of Stove Distillate at Mid-Continent Refineries
Price of 38-40 Straw Distillate (Group 3) Cents Per Gallon
4.5 Cts.
4.0 Cts.
3.5 Cts.
3.0 Cts.
Shipments
Production
Shaded Area Shows Decrease in Stocks
Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June
1929
1930


Millions of Gallons
Stocks of Gas Oil at Mid-Continent Refineries
Price of 32-36 Straw Gas Oil (Group 3) Cents Per Gallon
3.5 Cts.
3.0 Cts.
2.5 Cts.
Production
Shipments
Shaded Area Shows Decrease in Stocks
Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June
1929
1930

Pittsburgh
Gasoline Meters
are positive displacement, nutating piston meters and are built for



LONG LIFE



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Barometer of Mid-Continent Refinery Market—Week Ending April 18

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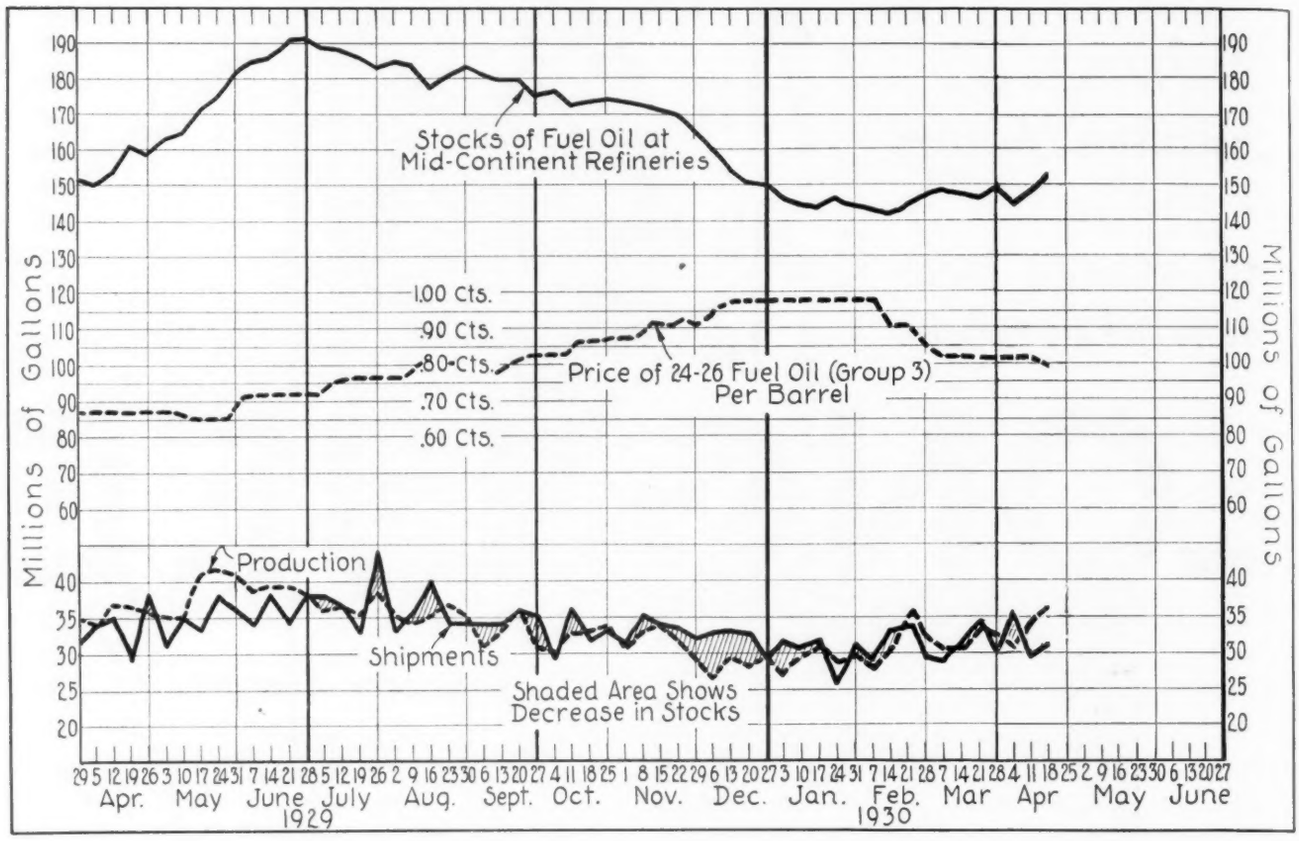

California Refinery Market

Local and Foreign Demand Quiet

LOS ANGELES, April 19

CALIFORNIA markets lacked any outstanding feature the past week. Quotations for practically all commodities remained unchanged. Without apparent justification a tone of optimism prevailed to the effect that local marketing conditions would take a turn for the better within the immediate future.

Independent refiners who reported receiving inquiries last week from an English buyer for several cargoes of U. S. Motor, were of the opinion that inability to obtain the gasoline at a satisfactory price had caused the offer to be withdrawn.

With the exception of one or two inquiries for gas oil and fuel oil, Pacific Coast shippers failed to report any active business in the offing. Some of the trade expressed the opinion that fuel oil prices would attain higher levels within the coming fortnight due to higher crude prices and to the reduction of refinery operations.

Although petroleum exports from southern California ports for week ended April 12 indicated a substantial increase over the preceding seven-day period, little of the goods that was moved represented spot stuff. Eastern companies with Pacific Coast subsidiaries have attempted to relieve the California gasoline situation where possible by moving their excess stocks out of this territory, taking care not to unbalance the Atlantic seaboard markets.

Unfavorable retail conditions on the Pacific Coast continued to engage the attention of the local trade and although a rumor persisted that the situation would be improved within a day or so, price cutting activities on the part of some independent companies continued unabated.

One large independent refiner was reported to be delivering motor fuel in tank truck and trailer lots at 10 cents per gallon, tax included. Notwithstanding the ability of this company to crack its fuel oil, there was considerable speculation as to how long such profitless procedure could be maintained.

With the prevailing tankwagon delivery price at 11.50 cents for standard gasolines, a number of resellers were displaying signs advertising motor fuel for sale for as low as 13 cents per gallon. Chain service stations were attempting to hold their prices at 15.50 cents, although losing considerable gallonage to stations selling at cut prices.

Quotations on U. S. Motor in tank cars ranged from 7 to 7.75 cents, without tax, for destinations within the state and from 6.50 to 7.25 cents for delivery in adjoining states. These figures were reported shaded by several members of the trade but the lower prices were not considered as representative of the general market.

Natural gasoline quotations showed a slight improvement during the past week over prices for the previous period, ranging from 6.50 to 7.25 cents per gallon. This commodity was reported available at the lower figure only for immediate delivery, with the trade generally of the opinion that prices would gradually improve.

Quotations on other refinery products remained unchanged for the week.

Pennsylvania Market

Motor Active in Future Trading

CLEVELAND, April 21.—Active buying of U. S. Motor gasoline for deferred shipment featured the western Pennsylvania market in the week ended April 19. Prices crept steadily upward. Both spot and future trading of other commodities was relatively light but prices lost comparatively little ground.

One refiner reported receiving inquiries for approximately 175 cars of U. S. Motor gasoline for shipment over May. Others also said the inquiry for shipment over this period was running unusually large.

There were few sellers who were willing to commit themselves on May prices up to the end of last week. Indications were that this class of business would go at around 8.50 cents.

Spot prices for U. S. Motor gasoline moved up rather slowly. Most of the improvement noted was on the low end of the market. Most of the offerings under 7.75 cents were eliminated by the end of the week and gasoline at this price was none too freely available. Quotations as high as 8.50 cents for spot shipment were reported. One seller sold two cars of U. S. Motor at this price.

There was a slightly better call for kerosene from the jobbing trade, according to reports of some sellers. However, generally speaking trading of this commodity still was rather slow. The minimum price at which 45 w.w. kerosene was available remained unchanged at 5.625 cents with quotations ranging as high as 6 cents.

Fuel oil was quiet with all grades more freely offered at 4 cents a gallon.

The neutral oil market was reported in a better position than it has been for some time past. Spot buying was rather slow, but steady movement against contracts kept any surplus offerings from appearing in the market.

Steam refined stock, particularly good filterable material continued rather tight. The minimum price for 600 stock held at 23.50 cents although this figure was said to have been shaded on special business. A bright stock manufacturer reported late in the week that all seven of the suppliers from whom he had purchased his April requirements of steam refined were behind on shipments.

A few small lots of No. 8 color cold test stock were reported sold at 39 cents gallon, 0.50-cent under the low quotation made for nearly six weeks.

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Eastern Domestic Markets

Gasoline Demand Quiet; Prices Steady

Staff Special
NEW YORK, April 19

CONDITIONS in eastern markets showed no change during the week ended April 19. The spot market for gasoline was slow although refiners were unwilling to accept large orders for future shipment at current prices. Kerosene sales were comparatively few, but quotations were unchanged.

Suppliers at New York continued to quote a wide range of prices for U. S. Motor and California gasoline. For U. S. Motor some sellers were holding their prices at 8.75 to 9 cents although the bulk of the small volume of spot stuff sold went at 8 to 8.50 cents. Quotations for California gasoline ranged from 8.50 to 9.75 cents.

The majority of the trade reported that the tank wagon price increase made last week by the Standard of New York had not stimulated sales materially but it had eliminated to a great extent the shading of posted quotations. Those sellers at New York quoting within the range of 8 to 8.50 cents reported a fair demand and one or two said their business was normal for this time of the year. Refiners quoting higher than the general market said they were not getting any orders but indicated they were out of the market until the price level reached their quotations.

Indications of a higher price level in the next few days were seen in the statement of many sellers that they would not accept large orders for future delivery at current prices. This was the stand most refiners took in the majority of districts.

Business at the end of the week took a setback with adverse weather. Fog and rain which blew in from the Atlantic paralyzed barge movement from Maine to the Virginias and shipping by this means was virtually at a standstill. The weather kept jobbers from ordering ahead for requirements over Good Friday which was a holiday in many eastern cities from Friday over the weekend.

Rumors were persistent toward the end of the week that the Standards of New Jersey and New York were going to increase wagon gasoline prices throughout their respective territories early next week. A boost by Atlantic Refining Co. also was expected in Pennsylvania. Another report was heard that Mid-Continent crude oil would be advanced again early in May and that an increase was expected in California crude in the near future. These reports were unconfirmed but many of the trade believed they were logical conclusions to draw in view of better marketing conditions and, as a result, a better feeling prevailed in the market.

Kerosene sales continued to be hampered in the more western districts of several east coast marketing territories by lowpriced kerosene from Pennsylvania. Boston, New York and Philadelphia refiners said their sales were restricted largely to the territory immediately adjacent to their refineries or terminals.

Some refiners were looking forward to the expiration in 1931 of large Bunker C fuel oil contracts and some have reported opening negotiations for their renewals. Reports indicated these renewals might be made to extend five years from the contract date. The price basis could not be learned although it was reported that a certain maximum would be set with the buyer benefiting by any drop in the posted market. Present contracts net back to the refiner $0.95, and less in some instances, which compares with the spot price of $1.15 at east coast ports.

Gulf Coast Markets

Coastwise Gasoline Quoted Higher

Staff Special
NEW YORK, April 19

AN INCREASE in Bunker C fuel oil prices for export shipment and U. S. Motor prices for coastwise movement, constituted the only price changes in Gulf markets the past week. Foreign buyers showed no interest in the market and none of the inquiries which were entered the previous week had resulted in business.

Bunker C fuel oil prices for cargo lots have been advancing over the past four or five weeks. A few weeks back the market was quoted at $0.68 to $0.70 with occasional reports of shading to $0.65. These prices gave way to a flat quotation of $0.70 which vanished in favor of $0.75 per barrel two weeks ago. At the end of the past week some suppliers asked $0.80 and the market gave signs of going higher.

These advances have not resulted from a spirited spot demand, traders said, but rather from the smaller amount of oil in storage. There has been a steady demand from contract purchasers, both foreign and domestic, and less Bunker fuel has been manufactured due to the lower level of refinery operations.

In spite of these quotations and the optimistic feeling which prevailed among refiners, there were some traders of the opinion that these prices could be shaded with firm business. This opinion also applied to prices for Bunker oil in barrels at the Gulf. One or two traders said $1.05 per barrel, the new price effective a week ago, could be shaded on prompt business.

For domestic shipment U. S. Motor prices at the Gulf moved up to 7.50 cents flat compared with the spread of 7 to 7.50 cents quoted a week ago. There were no quotations under 7.50 cents and one larger refiner quoted 7.75 cents. In view of the present tank car prices prevailing on the east coast, many traders said prices would have to be shaded substantially if the east coast buyers were to do business at the Gulf. Several felt a better price could be obtained with a firm offer.

As far as could be learned at the end of the week there had been no additional sales as a result of the 12 inquiries circulated through the market a week ago. It was reported the London concern which was alleged to have operated in the Mid-Continent early in the year under association prices, was negotiating with the French account for the sale of 3 cargoes of 64-66, 375 end point gasoline and U. S. Motor for June and July lifting. This report lacked confirmation, however, as did one to the effect that a California refiner had sold five cargoes of 400 end point gasoline to an English buyer.

Four States Jobbers Meet in October

WICHITA, Kansas, April 17.—The Four States jobbers' meeting will be held about the middle of October in Kansas City, Roy Reed, president of the Kansas City Oil Men's Club, announced at the annual convention of the Kansas Oil Men's Association here today. Probable dates are Oct. 14, 15, and 16. This year's meeting will have an equipment exhibit. Oil men were invited to bring their wives, as the meeting will be for the ladies also instead of the usual stag convention.

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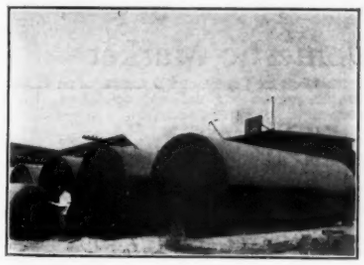

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Wax Markets

Scale Prices Dip Again

NEW YORK, April 19.—Crude scale waxes were lower in the New York and New Orleans markets at the end of the week and two grades of fully refined wax were quoted at higher prices. Aside from these price changes there was little variation in the two markets compared with a week ago. Inquiry from abroad was active but bid prices were lower and consequently only small lots were reported sold.

The highs of quotation ranges for both white and yellow crude scale moved downward in both markets late in the week. At New York quotations for white crude scale narrowed to 2.625 cents flat with goods available at the Gulf 0.125 cent lower. The general quotation for yellow crude scale was 2.50 cents in both markets.

Refiners advanced their prices for 125-127 A.m.p. and 128-130 A.m.p. fully refined waxes 0.125 cent at New York to 3.75 to 3.875 and 4 to 4.125 cents, respectively, and made corresponding advances in quotations for those grades at the Gulf. The large movement against contracts was the reason for these advances, the trade said.

Low bids and the comparative inactivity of the market has indicated that foreign buyers were interested in buying wax only at bargain prices. This has been particularly true the past few weeks with regard to scale goods. United Kingdom buyers have bid as low as 2.85 cents c.i.f. for white crude scale and then asked a preferred position for shipment, usually three to four months away. Refiners were not interested in accepting business for advanced periods at the bid prices and many would sell only small lots at the current market for spot movement.

The result of these differences of opinions between buyers and sellers has been a very slow market. One trader at New York reported that orders for a large volume of white crude scale had been placed during the past few weeks but believed they covered brokers' speculative purchases. Actual sales of 25 and 50-ton lots of white crude scale have been made from New York at 2.625 cents and reports were that figure had been shaded slightly. For the same grade at New Orleans it was reported that 2.50 cents could be shaded slightly for prompt movement.

A New York broker reported buying 70 tons of yellow crude scale from Pennsylvania refiners at 2.375 cents, 50 tons of which would move to the U. K. and the remaining 20 tons to domestic users. Reports were heard that one or two Pennsylvania refiners had offered white crude scale at 2.60 cents, f.a.s. New York.

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Complete Seaboard Market

(Export Markets for whole year given in OIL PRICE HANDBOOK. Each volume carries refinery, tank wagon, crude and export markets complete for the whole year)

Eastern Domestic Market

(Prices for tank car lots, f. o. b. refinery or seaboard terminal, representing majority of sales and quotations. Prices shown below do not include inspection tax levied in some states.)

U. S. MOTOR GASOLINE	Prices Apr. 21	Prices Apr. 14	Prices Apr. 7
New York harbor	†8.00 – 8.50	†8.00 – 8.50	†7.75 – 8.50
Portland district	*9.80	*9.80	*9.30
Boston district	*9.50	*9.50	*9.00
Providence district	*9.50	*9.50	*9.00
Philadelphia district	8.25 – 8.50	8.25 – 8.50	8.25 – 8.50
Baltimore district	8.25 – 8.50	8.25 – 8.50	8.25 – 8.50
Norfolk district	8.25 – 8.50	8.25 – 8.50	8.25 – 8.50
Charleston district	8.25 – 8.50	8.25 – 8.50	8.25 – 8.50
Savannah district	8.25 – 8.50	8.25 – 8.50	8.25 – 8.50
Jacksonville district	8.25 – 8.50	8.25 – 8.50	8.25 – 8.50
CALIFORNIA, U. S. MOTOR GASOLINE			
New York harbor	†8.50 – 9.00	†8.50 – 9.00	†8.50 – 9.00
Philadelphia district	8.50	8.50	8.50
Baltimore district	8.50	8.50	8.50
‡DOMESTIC AVIATION GASOLINE			
New York harbor	11.50 –12.50	11.50 –12.50	11.50 –12.50
Philadelphia	11.50	11.50	11.50
Baltimore	11.50 –12.50	11.50 –12.50	11.50 –12.50
Boston	11.50 –12.50	11.50 –12.50	11.50 –12.50

‡Prices are based on U. S. Gov't. specifications or better. Present Gov't. specifications require distillation range of 5% recovery at not more than 167° F., and not less than 122°F.; 50% recovery at 221°; 90% at 311°; 96% at 347°; end point 374° F. Gasoline of fighting grade specifications in some instances sells at a premium over domestic aviation grade. Prices represent majority of quotations.

WATER WHITE KEROSENE			
New York harbor	7.25 – 7.75	7.25 – 7.75	7.25 – 7.75
Philadelphia district	7.25 – 7.75	7.25 – 7.75	7.25 – 7.75
Baltimore district	7.25 – 7.75	7.25 – 7.75	7.25 – 7.75
GAS OIL: 28-34 Gravity			
New York harbor	4.75 – 5.25	4.75 – 5.25	4.75 – 5.25
Boston district	4.75 – 5.25	4.75 – 5.25	4.75 – 5.25
FURNACE OIL: 36-40 Gravity			
New York harbor	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25
Boston district	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25
GRADE C BUNKER OIL (Lighterage 5c per bbl. additional)			
New York Harbor	$1.15	$1.15	$1.05
Boston district	$1.15	$1.15	$1.05
DIESEL OIL			
New York harbor	$2.00 –$2.10	$2.00 –$2.10	$2.00 –$2.10

*Minimum delivered. †Nominal. **Delivered prices.

New York Export Market

(Lubricating oils are per gal. in bbls. F.a.s. New York)

	Apr. 21	Apr. 14	Apr. 7
CYLINDER OILS (Pennsylvania Products)			
Bright stock, dark	45.00 –47.00	45.00 –47.00	45.00 –47.00
600 D filtered	38.75 –40.00	38.75 –40.00	38.75 –40.00
600 Warren E filtered	35.00 –37.00	35.00 –37.00	35.00 –37.00
600 s.r. unfiltered	28.50 –29.50	28.50 –29.50	28.50 –29.50
650 s.r. unfiltered	35.00 –37.00	35.00 –37.00	35.00 –37.00
600 flash, s.r.	37.50 –40.00	37.50 –40.00	37.50 –40.00
630 flash, s.r.	42.50 –44.00	42.50 –44.00	42.50 –44.00
RED ENGINE OILS (Vis. 100°)			
300 vis. No. 6½ color	20.00 –21.00	20.00 –21.00	20.00 –21.00
250 vis. No. 6 color	17.50 –18.50	17.50 –18.50	17.50 –18.50
200 vis. No. 6 color	16.50 –17.50	16.50 –17.50	16.50 –17.50
PALE ENGINE OILS (Vis. 100°)			
230 vis. No. 3¾ color	23.00 –24.00	23.00 –24.00	23.00 –24.00
180 vis. No. 3¼ color	19.00	19.00	19.00
100 vis. No. 2¼ color	15.50 –16.00	15.50 –16.00	15.50 –16.00
MOTOR OILS (Vis. 100°)			
600 vis. No. 7 color	30.00	30.00	30.00
500 vis. No. 6½ color	26.50 –27.50	26.50 –27.50	26.50 –27.50
400 vis. No. 7¼ color	23.00 –25.00	23.00 –25.00	23.00 –25.00
300 vis. No. 6 color	20.00 –22.00	20.00 –22.00	20.00 –22.00
200 vis. No. 6 color	18.00 –20.00	18.00 –20.00	18.00 –20.00

Wax Markets

(Prices in cents per pound, A.S.T.M. tests; A.M.P. F.a.s. carload lots)

NEW YORK	Apr. 21	Apr. 14	Apr. 7
124-126 Yellow crude scale	2.50	2.50 – 2.625	2.50 – 2.625
122-124 White crude scale	2.625	2.625– 2.75	2.625– 2.75
124-126 White crude scale	2.625	2.625– 2.75	2.625– 2.75
123-125 Fully refined	3.50 – 3.625	3.50 – 3.625	3.50 – 3.625
125-127 Fully refined	3.75 – 3.875	3.625– 3.875	3.625– 3.875
128-130 Fully refined	4.00 – 4.125	4.00	4.00
130-132 Fully refined	4.50	4.50	4.50
133-135 Fully refined	5.00 – 5.25	5.00 – 5.25	5.00 – 5.25
135-137 Fully refined	5.50 – 5.75	5.50 – 5.75	5.50 – 5.75
NEW ORLEANS			
124-126 Yellow crude scale	2.50	2.50 – 2.625	2.50 – 2.625
122-124 White crude scale	2.50 – 2.625	2.50 – 2.75	2.625– 2.75
124-126 White crude scale	2.50 – 2.625	2.50 – 2.75	2.625– 2.75
123-125 Fully refined	3.50	3.50	3.50
125-127 Fully refined	3.75	3.625– 3.75	3.625– 3.75
128-130 Fully refined	4.00	3.875– 4.00	3.875– 4.00
130-132 Fully refined	4.375	4.375	4.375
133-135 Fully refined	5.00 – 5.25	5.00 – 5.25	5.00 – 5.25

Gulf Export Market

(Prices are f. o. b. Gulf oil terminals in Texas and Louisiana, shipments of 20,000 bbls. or more unless otherwise noted. Bulk gasoline and kerosene prices are posted quotations of the Export Petroleum Assoc., Inc., governing about 90% of the gasoline and kerosene shipped to foreign ports from the Gulf)

GASOLINE	Prices Apr. 21	Prices Apr. 14	Prices Apr. 7
U. S. Motor	8.00	8.00	8.00
60-62, 400 e.p.	9.00	9.00	9.00
61-63, 390 e.p.	9.25	9.25	9.25
64-66, 375 e.p.	9.50	9.50	9.50
U. S. Motor, cases (cargoes)	$1.85	$1.85	$1.85
64-66, cases (cargoes)	$2.00	$2.00	$2.00
KEROSENE			
44 water white	7.00	7.00	7.00
41-43 prime white	6.00	6.00	6.00
Water white, cases (cargoes)	$1.75	$1.75	$1.75
Prime white, cases (cargoes)	$1.65	$1.65	$1.65
DOMESTIC GAS & BUNKER OILS			
*26-30 translucent gas oil	3.50 – 3.75	3.50 – 3.75	3.50 – 3.75
*30 plus translucent gas oil	3.875– 4.00	3.875– 4.00	3.875– 4.00
Grade C bunker oil	$1.05	$1.05	$0.95
Grade C bunker oil, cargoes	$0.75 –$0.80	$0.75	$0.75

*Less than ½ of 1% sulphur.

MEXICAN CRUDE AND BUNKER OILS (f. o. b. Steamer, Tampico)			
Heavy Panuco crude taxes to be paid	$0.70	$0.70	$0.70
Grade C bunker oil for bunkering purposes, taxes paid	$1.00	$1.00	$1.00
SOUTH TEXAS LUBRICATING OILS (Viscosity at 100°F. cold test 0 Tanker, f. o. b. Houston)			
100 vis. No. 2 unfiltered pale	5.75 – 6.00	5.75 – 6.00	5.75 – 6.00
200 vis. No. 3 unfiltered pale	8.00 – 8.50	8.00 – 8.50	8.00 – 8.50
300 vis. No. 3 unfiltered pale	8.875– 9.50	8.875– 9.50	8.875– 9.50
500 vis. No. 3½ unfiltered pale	10.25 –11.25	10.25 –11.25	10.25 –11.25
750 vis. No. 4 unfiltered pale	12.50 –12.75	12.50 –12.75	12.50 –12.75
1200 vis. No. 5 unfiltered pale	16.00 –18.00	16.00 –18.00	16.00 –18.00
200 vis. No. 5-6 red oil	7.00 – 7.25	7.00 – 7.25	7.00 – 7.25
300 vis. No. 5-6 red oil	8.375– 8.50	8.375– 8.50	8.375– 8.50
500 vis. No. 5-6 red oil	9.25 – 9.50	9.25 – 9.50	9.25 – 9.50
750 vis. No. 5-6 red oil	11.50	11.50	11.50
1200 vis. No. 5-6 red oil	15.00 –15.25	15.00 –15.25	15.00 –15.25

Gulf Domestic Market

(Prices are f.o.b. Gulf oil terminals in Texas and Louisiana in shipments of 20,000 bbls. or more, representing sellers' opinions, for domestic shipment only.)

	Apr. 21	Apr. 14	Apr. 7
U. S. Motor gasoline	7.50	7.00 – 7.50	7.00 – 7.125
41-43 w.w. kerosene	5.875– 6.25	5.875– 6.25	5.875– 6.25
*26-32 translucent gas oil	3.75 – 4.00	3.75 – 4.00	3.75 – 4.00

*Less than ½ of 1% sulphur.

Pacific Export Market

(Quotations are at seaboard, Los Angeles, in cargo lots, cents per gallon, except where otherwise noted.)

	Apr. 21	Apr. 14	Apr. 7
Gasoline, U. S. Motor, 53-55 Gravity	6.00 – 7.00	6.00 – 7.00	6.00 – 7.00
Gasoline, U. S. Motor-blends and special cuts	7.25 –10.00	7.25 – 10.00	7.25 –10.00
Gas Oil, 30-34, per barrel	$0.80 –$1.05	$0.80 –$1.05	$0.80 –$1.05
Diesel Oil, 27 plus, per barrel	$0.75 –$1.00	$0.75 –$1.00	$0.75 –$1.00
Bunker oil, 14-18, per barrel	$0.65 –$0.85	$0.65 –$0.85	$0.65 –$0.85
Fuel oil, 14-18 per barrel	$0.60 –$0.85	$0.60 –$0.85	$0.60 –$0.85
Kerosene, 38-40 w.w., 125-150 flash, per gal.	5.00 – 6.00	5.00 – 6.00	5.00 – 6.00
Cased Goods			
Gasoline, U. S. Motor	$1.75 –$1.85	$1.75 –$1.85	$1.75 –$1.85
Kerosene, 38-40 w.w., 125-150 flash	$1.45 –$1.50	$1.45 –$1.50	$1.45 –$1.50

†Note: Above Pacific Export market prices for gasoline and kerosene in cargo lots apply only on goods for coastwise shipment. Gasoline and kerosene prices for shipment to foreign ports are determined as follows: Difference in freight between U. S. Gulf to European Continent and California to European Continent —this difference plus 0.125c for handling, deducted from prices posted at U. S. Gulf by the Export Petroleum Assoc., Inc., which are above prices.

Tanker Rates

(Approximate tanker freight rates to Continental ports, in shillings per ton of 2240 pounds, British sterling; to American ports, cents per barrel.)

	Apr. 12 Crude &/or Fuel	Refined Oil &/or Spirits
Calif. to U. K. or Continental ports*	35-40	42/6
Gulf to U. K. or Continental ports*	26-28	30-32/6
North Atlantic to U. K. or Continental ports*	23/6-25	27-29/6
Calif. to North Atlantic ports (not E. of N. Y.)	$0.90-$1.00	$1.00-$1.10
Gulf to North Atlantic ports (not E. of N. Y.)**	40-45	40

*Continental ports in the range between Bordeaux and Hamburg, both inclusive.

**Venezuela loading same rate. For Tampico 3c to 4c per bbl. addition.

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Tank Wagon, Service Station Markets for Gasoline and Kerosene

(OIL PRICE HANDBOOK has t.w. and s.s. markets for a whole year, arranged for quick reference)

These Prices in Effect Apr. 21, 1930, as Posted by Principal Marketing Companies

S.O. NEW JERSEY TERRITORY

	Gasoline Total				Oil
	T.W.	Tax	T.W.	S.S.	T.W.
Atlantic City, N. J.	14.5	2	16.5	18.5	13.5
Newark, N. J.	13.5	2	15.5	17.5	12.5
Annapolis	14	4	18	20	13
Baltimore, Md.	13.2	4	17.2	19.2	10.5
Cumberland, Md.	15	4	19	21	14
Washington, D. C.	13.7	2	15.7	17.7	12.7
Danville, Va.	14.8	5	19.8	21.8	13.8
Norfolk, Va.	13.3	5	18.3	20.3	11
Richmond, Va.	13.7	5	18.7	20.7	12.7
Roanoke, Va.	15	5	20	21	14
Petersburg, Va.	14.3	5	19.3	21.3	13.3
Charleston, W. Va.	14.5	4	18.5	20.5	12.5
Keyser, W. Va.	15.1	4	19.1	21.1	14.1
Parkersburg, W. Va.	13.2	4	17.2	19.2	11.2
Wheeling, W. Va.	14.4	4	18.4	20.4	12.4
Charlotte, N. C.	14.3	5	19.3	20.3	14.3
Hickory, N. C.	15.8	5	20.8	22.8	14.8
Mt. Airy, N. C.	15.5	5	20.5	22.5	14.5
Salisbury, N. C.	15.7	5	20.7	20.7	14.7
Charleston, S. C.	13.3	6	19.3	21.3	12.3
Columbia, S. C.	15.2	6	21.2	23.2	14.2

Note: 2c per gallon discount off t.w. price of gasoline to dealers and commercial consumers thru S. O. New Jersey territory.

CONTINENTAL OIL

Denver, Colo.	13	4	17	20	15.5
Pueblo, Colo.	14	4	18	21	15.5
Grand Junc., Colo.	19	4	23	26	19
Casper, Wyo.	15	4	19	22	14
Cheyenne, Wyo.	16.5	4	20.5	23.5	15.5
Butte, Mont.	19.5	5	24.5	27.5	20
Helena, Mont.	19.5	5	24.5	27.5	20
Salt Lake City, Utah	16.5	3½	20	20	17
Boise, Ida.	18.5	5	23.5	26.5	19
Twin Falls, Ida.	18.5	5	23.5	27.5	19
Albuquerque, N. M.	16	5	21	24	17

S. O. CALIFORNIA

			*Plant		
Phoenix, Ariz.	14	4	18	22	20
Los Angeles, Cal.	16.5	3	19.5	22.5	15.5
Fresno, Cal.	17	3	20	23	17
San Francisco, Cal.	17	3	20	23	15.5
Reno, Nev.	21	4	25	28	19
Portland, Ore.	15.5	4	19.5	22.5	16.5
Seattle, Wash.	15.5	3	18.5	21.5	16.5
Spokane, Wash.	19.5	3	22.5	25.5	20.5
Tacoma, Wash.	15.5	3	18.5	21.5	16.5

Note: 4c per gal. discount to dealers off t.w. price of gasoline to customers taking tank truck delivery, thru S. O. California territory except 1c discount at Phoenix to dealers only.

*Prices in the fourth column represent retail sale prices of gasoline for delivery into fuel tanks of customers' automotive equipment at S. O. California refineries, terminals and district depots as this company operates no retail service stations.

S. O. LOUISIANA

Little Rock, Ark.	13	5	18	19	13
Alexandria, La.	‡13	4	‡17	19	†14
Baton Rouge, La.	12	4	16	17	†14
Lake Charles, La.	11	*5	16	16	†14
New Orleans, La.	11	*5	16	16	†12
Shreveport, La.	12	4	16	16	†14
Lafayette, La.	13	*5	18	20	†14
Bristol, Tenn.	15	5	20	22	14
Chattanooga, Tenn.	15	5	20	22	13
Knoxville, Tenn.	15	5	20	22	16
Nashville, Tenn.	14	5	19	21	16
Memphis, Tenn.	13	5	18	20	12.5

Note: 2c per gallon discount off t.w. price of gasoline to dealers thru S. O. Louisiana territory.

*Lake Charles, New Orleans and Lafayette gasoline tax includes 4c state tax and 1c parish tax. New Orleans kerosene price includes 1c parish tax in addition to 1c state tax.

†Kerosene price in Louisiana includes 1c state tax.

‡Alexandria gasoline prices include 1c parish tax.

S. O. KENTUCKY

Ashland, Ky.	14	5	19	21	15
Catlettsburg, Ky.	14	5	19	21	15
Lexington, Ky.	13	5	18	20	14.5
Louisville, Ky.	14	5	19	21	13
Covington, Ky.	15	5	20	21	14.5
Clarksdale, Miss.	13	5	18	20	12.5
Gulfport, Miss.††	15.5	5	20.5	22.5	13
Jackson, Miss.	14	5	19	21	13
Natchez, Miss.	13.5	5	18.5	20.5	13
Vicksburg, Miss.	13.5	5	18.5	20.5	13
Birmingham, Ala.‡‡	16	4	20	22	14.5
Mobile, Ala.‡	13	4	17	17	13.5
Montgomery, Ala.*	16	4	20	22	15
Atlanta, Ga.	14	6	20	22	†15.5
Augusta, Ga.	13	6	19	21	†15.5
Macon, Ga.	13	6	19	21	†14
Savannah, Ga.	12	6	18	20	†14
Jacksonville, Fla.	14	6	20	22	14
Miami, Fla.	15	6	21	23	14
Tampa, Fla.	14	6	20	22	13
Pensacola, Fla.**	12	6	18	20	13.5

Note: Net price of gasoline to dealers is 2c under posted t.w. price thru S. O. Kentucky territory.

*Local privilege tax of 1 cent on gasoline and ½ cent on kerosene at Montgomery included.

†Georgia kerosene prices include 1c state tax.

**Both tank wagon prices include 1c city tax at Pensacola which went into effect Oct. 15, 1926.

††Both tank wagon prices at Gulfport include Harrison county privilege tax of 2c.

‡Mobile gasoline prices include 1c city tax.

‡‡Birmingham gasoline prices include 1c city tax.

S. O. NEBRASKA

Omaha, Neb.	15.25	4	19.25	21.25	13.25
McCook	16.75	4	20.75	22.75	14.75
Norfolk	15.75	4	19.75	21.75	13.75
North Platte	16.75	4	20.75	22.75	14.50
Scottsbluff	16.75	4	20.75	22.75	14.25

S. O. INDIANA

Chicago, Ill.	15	3	18	19	13
Decatur, Ill.	15.2	3	18.2	19.2	13.1

Latest Changes in Tank Wagon Prices

Gasoline

S. O. Louisiana—T.w. and s.s. up 1c thru Louisiana, Arkansas and Tennessee, **April 15.**

S. O. Ohio—T.w. cut 1c, s.s. 2c, Muskingum and Licking counties, both to 18c, **April 22.** These changes are not included in the table, due to prices in the table being those in effect Monday, **April 21.**

T.w. and s.s. up 2c, Marion township including city of Marion, both to 18c, **April 19.**

S. O. Kentucky—T.w. and s.s. gasoline cut 2c, Savannah, to 18c and 20c respectively, **April 14.**

T.w. and s.s. up 1c, Covington, to 20c and 21c, **April 17.**

Continental Oil—T.w. and s.s. up 1c generally thru Montana, Wyoming and Colorado, **April 12,** with these exceptions: Denver s.s. up 2c; Pueblo s.s. up 2c, t.w. unchanged; no change in immediate vicinity of Denver, Colorado Springs and Pueblo.

T.w. and s.s. up 1c generally, thru New Mexico, where spread between t.w. and s.s. was normal of 3c, **April 17.** Some points s.s. up 2c, including Albuquerque, to make 3c spread.

Magnolia Petroleum—T.w. and s.s. up 1c thru Louisiana and Arkansas, **April 14.** S.s. cut 2c to 13c same as t.w. at Texarkana.

T.w. and s.s. up 1c, Tulsa, to 16c and 20c, **April 15.**

Canada—Gasoline prices up 2c, thru Manitoba, covering 2c increase in gasoline tax which brought it to 5c, **April 14.**

Kerosene

Canada—Kerosene cut 2c, Nova Scotia, New Brunswick and Prince Edward Island, to 22c t.w., **April 3.**

	Gasoline Total				Oil
	T.W.	Tax	T.W.	S.S.	T.W.
E. St. Louis, Ill.	14.4	3	17.4	18.4	12.2
Joliet, Ill.	15.4	3	18.4	19.4	13.3
Peoria, Ill.	15.2	3	18.2	19.2	13.1
Quincy, Ill.	15.2	3	18.2	19.2	12.9
Indianapolis, Ind.	15.2	4	19.2	20.2	14.2
Evansville, Ind.	15	4	19	20	14
South Bend, Ind.	15.4	4	19.4	20.4	14.4
Detroit, Mich.	15.8	3	18.8	19.8	14.7
Grand Rapids, Mich.	15.7	3	18.7	19.7	14.6
Saginaw, Mich.	15.9	3	18.9	19.9	14.8
Green Bay, Wisc.	15.6	2	17.6	18.6	13.4
Madison, Wisc.	15.3	2	17.3	18.3	13.1
Milwaukee, Wisc.	15.1	2	17.1	18.1	12.9
La Cross, Wisc.	16.2	2	18.2	19.2	14
Minneapolis, Minn.	16.2	3	19.2	20.2	13.9
Duluth, Minn.	16.5	3	19.5	20.5	13.9
Mankato, Minn.	16.1	3	19.1	20.1	13.7
Des Moines, Ia.	15.5	3	18.5	19.5	13.3
Davenport, Ia.	15.5	3	18.5	19.5	13.3
Sioux City, Ia.	15.1	3	18.1	19.1	12.9
Mason City, Ia.	15.5	3	18.5	19.5	13.3
St. Louis, Mo.	*14.9	2	16.9	17.9	12.3
Kansas City, Mo.	†15.9	2	17.9	18.9	11.6
St. Joseph, Mo.	†15.5	2	17.5	18.5	12.2
Fargo, N. D.	17.9	3	20.9	21.9	15.9
Grand Forks, N. D.	18.2	3	21.2	22.2	16.2
Minot, N. D.	17.9	3	20.9	21.9	15.9
Pierre, S. D.	16	4	20	21	14.4
Huron, S. D.	16.3	4	20.3	21.3	14.7
Wichita, Kans.	13.8	3	16.8	14.8	11.8
Bartlesville, Okla.	13.5	4	17.5	18.5	11.5

S. O. Indiana's quantity contract price schedule thru territory (except in Chicago and Detroit, which see below) on tank truck deliveries of gasoline, figured from the service station price is 2c for 500 gals. or more a month; 2½c for 2,000 gals. or more a month; 3c for 6,000 gals. or more a month; and 4½c for 100,000 gals. or more a month.

In Chicago and vicinity, these discounts apply: Over 500 gals. per month, 2c per gal. off service station price; over 1,000 gals. per month, 4c per gal. off service station price; over 50,000 gals. per month, 4½c per gal. off s.s. price; over 75,000 gals., 5c off.

In Detroit, dealers and consumers signing contract for all gasoline for one year, get 4c per gal. off s.s. price. Non-contracted accounts get 3c off s.s. price. Those buying 100,000 gals. or more a month, 4½c per gal. off s.s. price.

*Includes city tax of ½c.

†Includes city tax of 1c.

S. O. OHIO

Ohio state-wide	15	4	19	20	13
†Darke, Hancock, Preble and Scioto Counties	14	4	18	18	†13
Athens County	12	4	16	16	13

Note: Discount to dealers and commercial accounts generally thru Ohio is 2c per gal. off t.w. price with some exceptions. In counties where prices are below normal, discount is 3c per gal. off t.w. price.

†Kerosene t.w. price in Darke County is 11c; in Paulding County 12c.

MAGNOLIA PETROLEUM

Muskogee, Okla.	12	4	16	19	10
Oklahoma City	11	4	15	18	10
Tulsa, Okla.	12	4	16	20	10
Fort Smith, Ark.†	11	†4	15	17	12
Little Rock, Ark.	13	5	18	19	13
Texarkana, Ark.*	19	*4	13	13	12
Dallas, Tex.	12	4	16	20	12
Fort Worth, Tex.	12	4	16	19	12
Houston, Tex.	11	4	15	19	11
San Antonio, Tex.	11	4	15	19	11
El Paso, Tex.	12	4	16	20	13

*Within city of Texarkana, the state tax on gasoline is 4c per gal. conforming with the Texas state tax. In this district outside of the city the 5c Arkansas tax applies.

†Within city of Fort Smith, Oklahoma tax of 4c applies. In this district outside of the city, the 5c Arkansas tax applies.

S. O. NEW YORK

Due to local price conditions at many points in S. O. New York territory, actual prices on both gasoline and kerosene are being made at under the posted tank wagon prices published below.

Greater New York City: Boroughs of Manhattan, Bronx, Queens & Kings	13.3	2¢	15.3	17.3	11.3
Borough of Richmond	13.7	2	15.7	17.7	11.7
Albany, N. Y.	14.6	2	16.6	18.6	12.6
Buffalo, N. Y.	12.8	2	14.8	16.8	11.8
Rochester, N. Y.	13	2	15	17	12
Syracuse, N. Y.	12.8	2	14.8	16.8	12.8
Boston, Mass.	13.5	2	15.5	17.5	11.5
Augusta, Me.	14.8	4	18.8	20.8	12.8
Manchester, N. H.	14.4	4	18.4	20.4	12.4
Burlington, Vt.	15.3	4	19.3	21.3	13.3

Above prices include these inspection fees on both gasoline and kerosene, per gallon: Alabama, 1/40c on gasoline, 1/2c kerosene; Arkansas, 1/20c on both; Florida, 1/8c on both; Georgia, 1/10c on both; Illinois, 3/100c on both; Indiana, 4/25c to 1/2c on both; Kansas, 3/50c on both; Louisiana, 1/32c on gasoline; Minnesota, 3/50c on both; Missouri, 3/10c to 1/2c on both; Nebraska, 3/100c on both; North Carolina, 1/4c on both; North Dakota, 1/20c on both; Oklahoma, 4/25c on both; South Carolina, 1/8c on both; South Dakota, 1/10c on both; Tennessee, 2/5c on gasoline and 1/2c to 4/5c on kerosene; Wisconsin, 3/50c on both.

Kerosene inspection fees only, per gallon; Iowa 7/100c; Michigan 1/5c to 4/5c per gal.

Tank Wagon, Service Station Markets for Gasoline and Kerosene

Prices in Effect Apr. 21, 1930

S. O. NEW YORK

	Gasoline Total T.W.	Tax	T.W.	S.S.	Oil T.W.
New Haven, Conn.	14.6	2	16.6	18.6	12.6
Providence, R. I.	13.7	2	15.7	17.7	11.7

Note: S. O. New York allows 3c off t.w. price to dealers in New York City, and 2c off t.w. price thru rest of territory.

ATLANTIC REFINING

Pittsburgh, Pa.	15	*	15	21	13
Philadelphia, Pa.	15	*	15	21	13
Allentown, Pa.	15	*	15	21	13
Erie, Pa.	15	*	15	19	13
Scranton, Pa.	15	*	15	21	13
Altoona, Pa.	15	*	15	21	13
Dover, Del.	15	3	18	20	13
Wilmington, Del.	15	3	18	20	13
Boston, Mass.	13.5	2	15.5	17.5	11.5
Springfield, Mass.	14.5	2	16.5	18.5	12.5
Worcester, Mass.	14.3	2	16.3	18.3	12.3
Fall River, Mass.	14.1	2	16.1	18.1	12.1
Providence, R. I.	13.7	2	15.7	17.7	11.7
Hartford, Conn.	14.5	2	16.5	18.5	12.5
New Haven, Conn.	14.6	2	16.6	18.6	12.6
Atlantic City, N. J.	14.5	2	16.5	18.5	13.5
Canden, N. J.	13.6	2	15.6	17.6	12.6
Trenton, N. J.	14	2	16	18	13
Annapolis, Md.	14	4	18	20	13
Baltimore, Md.	13.2	4	17.2	19.2	10.5
Hagerstown, Md.	14.7	4	18.7	20.7	13.7
Richmond, Va.	13.7	5	18.7	20.7	12.7
Wilmington, N. C.	13.4	5	18.4	20.4	12.4
Brunswick, Ga.	14	6	20	22	**15
Jacksonville, Fla.	14	6	20	22	14

Note: 2c per gal. discount off t.w. price of gasoline on sales to dealers; discount to commercial accounts under contract for one year in accordance with Code of Ethics.

*4-cent state tax is collected by retail dealer and paid by him directly to state.

**Georgia kerosene prices include 1c state tax.

V. M. & P. NAPHTHA

(Changes ordinarily occur coincident with gasoline price changes)

	Oleum Spirits	V.M.&P. Naphtha	Cleaner Naphtha
Chicago	14.7	16.7	17
Detroit	17.4	18.9	20.7
Kansas City	†15.9	†17.4	†19.2
Milwaukee	16.4	*19.9	*21.7
Minneapolis	**20.7	**22.2	**24
St. Louis	15.6	17.1	18.9
New York		16	23
Boston		19	23

*Includes 2c state tax. †Includes 1c city tax.
**Includes 3c state tax.

Petroleum Spirits (Solvent)

Tank Cars (F.o.b. refinery or seaboard terminal)	
New York harbor	11.00
Philadelphia district	11.00
Providence	11.50
Tank Wagon or Steel Barrels	
New York City	18
Syracuse	17–18
Rochester	18
Buffalo	17–18
Providence	19
Boston	19
Bridgeport	16–18
Newark	18
Philadelphia	16
Baltimore	18

Note: 2c off above t.w. prices to large buyers in some instances.

CANADA

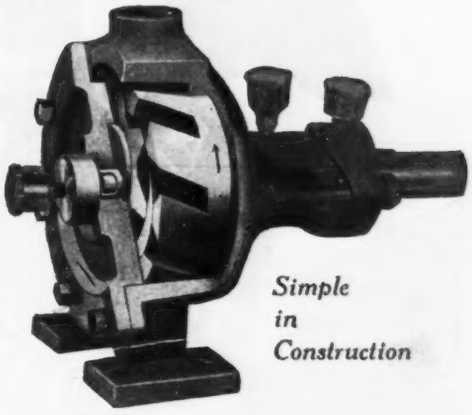
(Per Imperial Gallon, which is 1.2 American Gallons)

ONTARIO	Gasoline Total T.W.	Tax	T.W.	S.S.	Oil T.W.
Toronto	19.5	5	24.5	28	20.5
Ottawa	19.5	5	24.5	28	20.5
North Bay	22.5	5	27.5	33	27
Ft. William	22.5	5	27.5	31	22.5
Border Cities, including Windsor	18.5	5	23.5	27	19.5
MANITOBA					
Winnipeg	21.5	5	26.5	30	21.5
SASKATCHEWAN					
Regina	26	5	31	35	26
ALBERTA					
Edmonton	27.5	5	32.5	36	27.5
Calgary	23.5	5	28.5	32	23.5
BRITISH COLUMBIA					
Vancouver	23	5	28	32	24
QUEBEC					
Montreal	20.5	5	25.5	29	21.5
Quebec City	21.5	5	26.5	30	22.5
Three Rivers	21.5	5	26.5	30	22.5
NEW BRUNSWICK					
St. John	20	5	25	29	22
Moncton	20	5	25	29	22
NOVA SCOTIA					
Halifax	20	5	25	29	22
PRINCE EDWARD ISLAND					
Charlottetown	20	5	25	29	22

Note: In districts surrounding these points 1c additional is added to city price.

AUTOMATICALLY TAKES UP WEAR

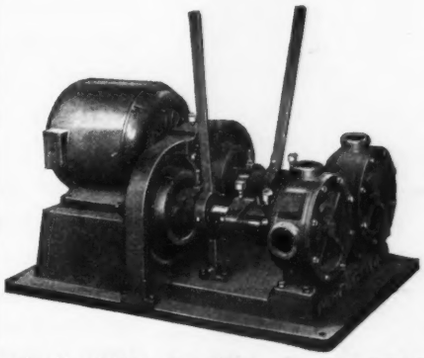
The pressure of the liquid passing through the Perfection Rotary Pump balances evenly with the end-thrust of the helical gears. That is why Perfection Rotary Pumps operate just as efficiently after years of service. The balanced pressure of the liquid *automatically takes up wear.*



Simple in Construction

There is no shock . . . no vibration in a Perfection Rotary Pump. The helical gears work like a pair of scissors. They cut on an angle and slice the stream of liquid passing through the pump instead of splashing into it head on.

Perfection Rotary Pumps are surprisingly simple in construction. There are only two moving parts . . . the helical rotor and internal helical pinion. The intermeshing teeth of the rotor and pinion work like a series of pistons in cylinders. Helical gears have long been recognized by the engineering profession as preferable to straight gears for power transmission. The Perfection Rotary Pump is the only one on the market with helical gears. Write today for complete information.



Type No. 6 Twin Gear Drive Unloading Pump with motor

Perfection Manufacturing Company

2194 East Hennepin Avenue, Minneapolis, Minn.

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STORAGE TANKS, FIELD-BUILT

Guarantee Thickness Material

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BROWN SHEET IRON & STEEL CO.

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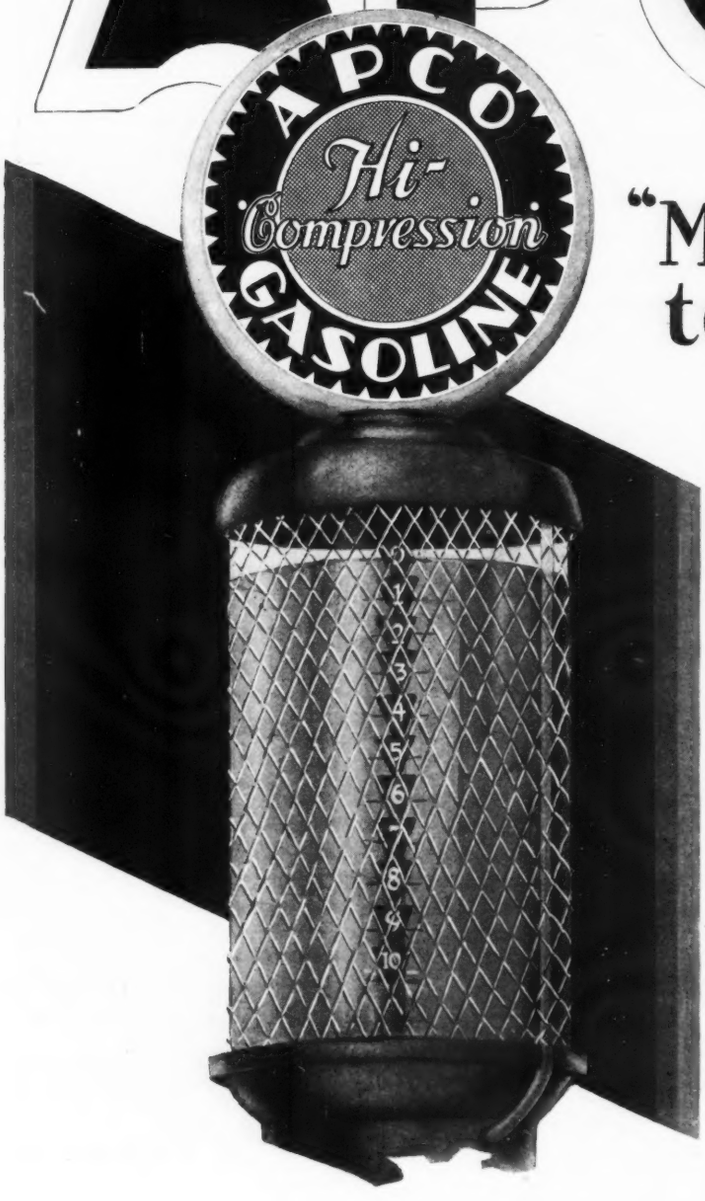
APCO



"More POWER to you". . . . .

APCO HI-COMPRESSION GASOLINE combines high test and "anti-knock" virtues with reasonable premium cost. After exhaustive tests, we now offer the new APCO—made at Cyril, Oklahoma—with high gravity, low endpoint, and extra high benzol equivalent. APCO is a high test, "anti-knock" motor fuel, available in either red or water-white. APCO means "more power to you."

Write immediately for full specifications and details of our marginal contract over 1930 and our sales-building merchandising plan. It means more business—more profits.

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We offer APCO SUPER KEROSENE—with high gravity, low endpoint, low flash, water-white, excellent burning test—the all-purpose product. Protect yourself now against your spring kerosene requirements.

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We provide a complete family of petroleum products, backed by our service guarantee and marginal protection. In making 1930 plans, you owe it to your business to get in touch with us.

ANDERSON-PRICHARD OIL CORPORATION

PRODUCERS AP REFINERS

OKLAHOMA CITY, OKLA.

Crude Oil Prices (in Effect April 21, 1930)

(Crude prices for the whole year in OIL PRICE HANDBOOK published annually)

EASTERN FIELDS

(Posted by Joseph Seep Purchasing Agency)
(All Penna. Grade Crude Effective Feb. 17, 1930)
†Bradford—Alleghany district.....$3.00
Bradford District Oil in New York Transit Lines (Bradford District).....††$2.75
Bradford District Oil in National Transit Lines (Bradford District).....††2.75
Penna. Grade Oil in National Transit Lines (Other Pennsylvania).....*2.80
Penna. Grade Oil in Southwest Penna. Pipe Lines (Other Pennsylvania).....2.75
Penna. Grade Oil in Eureka Pipe Lines (West Virginia).....2.65
Penna. Grade Oil in Buckeye Pipe Lines (Macksburg, O. district).....2.45
Wayne district crude in Cumberland lines (West Virginia) (Effective Apr. 11, 1930)...1.34
Corning Grade in Buckeye Pipe Lines (Ohio) (Effective Feb. 17, 1930).....1.65
Corning, O., heavy grade (Effective Feb. 17, 1930).....1.55
Somerset Oil in Cumberland Pipe Lines (Kentucky) (Effective Apr. 11, 1930)....1.47
Somerset Oil in Eureka Pipe Lines (Effective Apr. 11, 1930).....1.31
Ragland Grade in Cumberland Pipe Lines (Kentucky) (Effective Jan. 29, 1929)....$0.60
*Oil run prior to July 1, 1929 is $2.75 per bbl.
†Posted by Tide Water Pipe Co., Ltd.
††Oil run prior to July 1, 1929 is $2.70 per bbl.

(Posted by Stoll Oil Refining Co.)
Oil City, Ky., oil in Stoll lines (Effective Apr. 18, 1930).....$1.55

MICHIGAN
(Posted by Dixie Oil Co.)

Traverse and Dundee (Muskegon):

32-32.9	$1.08	39-39.9	$1.29
33-33.9	1.11	40-40.9	1.32
34-34.9	1.14	41-41.9	1.35
35-35.9	1.17	42-42.9	1.38
36-36.9	1.20	43-43.9	1.41
37-37.9	1.23	44 and above	1.44
38-38.9	1.26		

(Posted by Pure Oil Co.)
Midland, Midland County.....$1.25

CENTRAL STATES FIELDS
Posted by Ohio Oil Co.
Effective Apr. 11, 1930

Wooster	$1.80	Princeton	$1.65
Lima	1.70	Illinois	1.65
Waterloo	1.20	Plymouth	1.23
Indiana	1.47	West Kentucky	1.55

CANADIAN CRUDE
Posted by Imperial Oil Refineries, Ltd.
Petrolia.....$2.10
Oil Springs.....2.17

OKLAHOMA, KANSAS and NORTH TEXAS
Prices of Prairie Oil & Gas Co.
(In Oklahoma and Kansas)
Effective Apr. 10, 1930

Below 25	$0.75	35-35.9	$1.255
25-25.9	0.80	36-36.9	1.29
26-26.9	0.85	37-37.9	1.325
27-27.9	0.90	38-38.9	1.36
28-28.9	0.95	39-39.9	1.395
29-29.9	1.00	40-40.9	1.43
30-30.9	1.05	41-41.9	1.465
31-31.9	1.10	42-42.9	1.50
32-32.9	1.15	43-43.9	1.535
33-33.9	1.185	44 and above	1.57
34-34.9	1.22		

(In North Texas: Ranger, Wichita Falls, Mexia)
Effective Apr. 10, 1930

Below 25	$0.72	30-30.9	$1.02
25-25.9	0.77	31-31.9	1.07
26-26.9	0.82	32-32.9	1.12
27-27.9	0.87	33-33.9	1.17
28-28.9	0.92	34-34.9	1.22
29-29.9	0.97	35-35.9	1.255
36-36.9	$1.29	41-41.9	$1.465
37-37.9	1.325	42-42.9	1.50
38-38.9	1.36	43-43.9	1.535
39-39.9	1.395	44 and above	1.57
40-40.9	1.43		

The Texas Co., same schedule in North Texas, North Central Texas and Central Texas as Prairie and Humble in North Texas, effective Apr. 10.

Humble Oil & Refining Co. Prices
(Ranger, North Texas, Mexia, Powell, Boggy Creek, Richland, Wortham, Lytton Springs, Currie, Moran and Nocona crudes all in Texas.)
Humble's prices in above fields same as Prairie's prices in North Texas, effective Apr. 10, which see.

Magnolia Petroleum Co.
(In Oklahoma, Kansas and North and East Central Texas)

Below 26	$0.70	28-28.9	$0.88
26-26.9	0.76	29-29.9	0.95
27-27.9	0.82	30-30.9	1.02

Rest of Magnolia schedule up to 44 and above same as Prairie in Oklahoma and Kansas.
Apr. 10, 1930, Glasscock, Crane, Upton, Winkler, Howard and Mitchell Counties same prices as Humble's postings in Winkler, Crane, etc., which see
Corsicana heavy.....$0.80
Luling.....0.85
Mirando.....0.85
Darst Creek, 60° F. gravity.....1.15

Carter Oil Co.
(Oklahoma and Kansas)
Apr. 10, 1930, same schedule as Prairie, which see.

PANHANDLE TEXAS
Humble Oil & Refining Co.
Effective Apr. 10, 1930

Hutchinson and Carson Counties:

Below 32	$0.775	38-38.9	$1.065
32-32.9	0.825	39-39.9	1.10
33-33.9	0.875	40-40.9	1.135
34-34.9	0.925	41-41.9	1.17
35-35.9	0.96	42-42.9	1.205
36-36.9	0.995	43-43.9	1.24
37-37.9	1.03	44 and above	1.275

Gray County:

Below 29	$0.755	37-37.9	$1.16
29-29.9	0.805	38-38.9	1.195
30-30.9	0.855	39-39.9	1.23
31-31.9	0.905	40-40.9	1.265
32-32.9	0.955	41-41.9	1.30
33-33.9	1.005	42-42.9	1.335
34-34.9	1.055	43-43.9	1.37
35-35.9	1.09	44 and above	1.405
36-36.9	1.125		

Wheeler County: Posted by Magnolia Pet. Co. Humble withdrew Wheeler county postings Apr. 10.

Below 30	$0.755	37-37.9	$1.11
30-30.9	0.805	38-38.9	1.145
31-31.9	0.855	39-39.9	1.18
32-32.9	0.905	40-40.9	1.215
33-33.9	0.955	41-41.9	1.25
34-34.9	1.005	42-42.9	1.285
35-35.9	1.04	43-43.9	1.32
36-36.9	1.075	44 and above	1.355

Above prices met by The Texas Co. and Magnolia on Apr. 10.

WEST TEXAS AND NEW MEXICO
Humble Oil & Refining Co.
Effective Apr. 10, 1930

Winkler, Crane, Upton, Crockett, Ector, and Pecos Counties, also Lea County, N. Mex.

Below 25	$0.65	31-31.9	$0.86
25-25.9	0.68	32-32.9	0.89
26-26.9	0.71	33-33.9	0.92
27-27.9	0.74	34-34.9	0.95
28-28.9	0.77	35-35.9	0.98
29-29.9	0.80	36 and above	1.01
30-30.9	0.83		

Howard and Glasscock counties:
Effective Apr. 10, 1930

Below 25	$0.65	31-31.9	$0.82
25-25.9	0.68	32-32.9	0.84
26-26.9	0.71	33-33.9	0.86
27-27.9	0.74	34-34.9	0.88
28-28.9	0.76	35-35.9	0.90
29-29.9	0.78	36 and above	0.92
30-30.9	0.80		

Apr. 10, 1930, The Texas Co. posted same prices in Crane, Upton, Winkler and Lea counties as Humble.

SOUTH AND SOUTHWEST TEXAS
(Posted by Humble Oil & Refining Co.)
Effective Apr. 10, 1930

Mirando.....$0.85
Salt Flat.....1.15
Darst Creek.....1.15
Pettus, Bee County.....1.40

NORTH LOUISIANA—ARKANSAS FIELDS
Prices of Standard Oil Co. of Louisiana
Caddo, Homer, Haynesville, Bull Bayou, El Dorado, Crichton, De Soto, and Sabine.
Effective Apr. 11, 1930

Below 28	$0.87	36-36.9	$1.29
28-28.9	0.92	37-37.9	1.325
29-29.9	0.97	38-38.9	1.36
30-30.9	1.02	39-39.9	1.395
31-31.9	1.07	40-40.9	1.43
32-32.9	1.12	41-41.9	1.465
33-33.9	1.17	42-42.9	1.50
34-34.9	1.22	43-43.9	1.535
35-35.9	1.255	44 and above	1.57

Cotton Valley, Sarepta and Carterville below 36 $0.85. Rest of schedule same as Caddo, Homer, etc.

Smackover, below 24	$0.90		
do 24 and above	1.05		
Bellevue (Apr. 11, 1930)	1.15		
*Urania, La. (Apr. 11, 1930)	0.95		
†East El Dorado (Calion) (Apr. 11, 1930)	0.90		

*Posted by Louisiana Oil Refining Corp.
†Posted by Magnolia Petroleum Co.
Apr. 10, 1930, The Texas Co. same schedule in Louisiana as Standard, plus these grades: 24-24.9, $0.67; 25-25.9, $0.72; 26-26.9, $0.77; 27-27.9, $0.82.
Apr. 11, Magnolia met Standard schedule in Louisiana-Arkansas fields.

STEPHENS, ARKANSAS
Lousiana Oil Refining Corp., and Atlantic Oil Producing Co.
Effective Apr. 11, 1930

Below 28	$0.76	30-30.9	$0.91
28-28.9	0.81	31-31.9	0.96
29-29.9	0.86	32 and above	1.01

GULF COASTAL
Posted by Humble Oil & Refining Co.
Effective Apr. 10, 1930

Grades A	$1.15	34-34.9	$1.30
Grades B:		35-35.9	1.33
Below 25	1.00	36-36.9	1.36
25-25.9	1.03	37-37.9	1.39
26-26.9	1.06	38-38.9	1.42
27-27.9	1.09	39-39.9	1.44
28-28.9	1.12	40-40.9	1.46
29-29.9	1.15	41-41.9	1.48
30-30.9	1.18	42-42.9	1.50
31-31.9	1.21	43-43.9	1.52
32-32.9	1.24	44 and above	1.54
33-33.9	1.27		

Refugio county (rest of schedule, same as Grades B, which see above).

Below 25	$0.85		
25-25.9	1.03		

Fields classified as A and B are Spindletop, Goose Creek, Hull, Liberty, Sour Lake, West Columbia, Orange, Boling, Humble, Pierce Junction, Sugarland and Raccoon Bend. All other fields are Grades A only.
Specifications for Grade "A" crude: Gravity: 25° and below, at 60° F; Viscosity: not less than 100 seconds at 100° F Saybolt.
Sulfur: not over .4%.
Grade "B" includes all Coastal crude which does not meet the test for "A" grades.

Crude Oil Price Changes

LOUISVILLE—On April 18 Stoll Oil Refining Co. advanced Oil City, Ky. crude in its lines 10 cents, making new price $1.55 per barrel at wells.

Correction

Prices of North Louisiana natural gasolines as of April 14 as published on page 122 of the April 16 issue of NATIONAL PETROLEUM NEWS were in error, as of April 14.

Correct prices on April 14 were: Grade AA, 6.75 cents; Grades BB and C, 6 cents, instead of 6.50 and 5.75 cents respectively as published.

S.O. New Jersey Refineries Curtailment Program

NEW YORK, April 18.—The various operating units of the Standard Oil Co. (N. J.) all adopted the suggestion of the Federal Oil Conservation Board March 8 that refinery operations be curtailed to avoid manufacturing a surplus of gasoline, the company states in the last issue of The Lamp. The statement said:

"While there has of course been some fluctuation in the totals since that time, the minimum reduction in the amount of crude oil run through the refineries, in the movement of crude through pipe lines, in importations of foreign oil and in the production of gasoline has never been less than 15 per cent, or approximately one-seventh, of the figures for the week immediately preceding the date of the curtailment order.

"The company's stock of gasoline on April 1, 1930 was 8.3 per cent less than the stock on hand a year ago on the same date."

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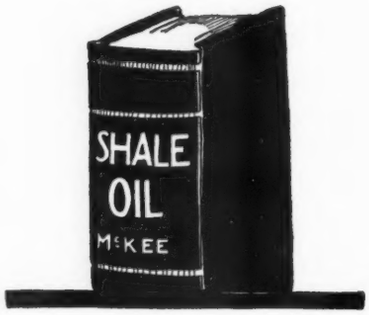

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Crude Oil Prices (in Effect April 21, 1930)

(Prices are per barrel at the well)

(Crude Oil Prices for the whole year in OIL PRICE HANDBOOK published annually)

GULF COASTAL

Prices of The Texas Co.

Effective Apr. 10, 1930

Grades A.....$1.15 *Grades B.....$1.00

*Grades B include all heavy crudes which do not meet tests for Grades A or for Grades B light crude. Prices for Grades B light crude are the same as Humble's, which see.

ROCKY MOUNTAIN FIELDS

Prices of Ohio Oil Co., and Midwest Refining Co.

(Salt Creek prices effective Apr. 10, 1930)

‡Salt Creek 29–29.9	$1.00
" " 30–30.9	1.05
" " 31–31.9	1.10
" " 32–32.9	1.15
" " 33–33.9	1.185
" " 34–34.9	1.22
" " 35–35.9	1.255
" " 36–36.9	1.29
" " 37 and above	1.325
Elk Basin	1.55
Grass Creek light	$1.55
Big Muddy	1.38
Lance Creek	1.63
Rock Creek	1.35
Mule Creek	1.20
Rex Lake	1.10
‡Osage	1.63
‡Cat Creek, Mont.	1.55
Sunburst, Mont.	1.65
‡Hogback, N. Mex.	1.40
Artesia, N. Mex.	1.05

‡Posted by Midwest Refining Co. Midwest also buys Grass Creek light and Elk Basin.

CALIFORNIA

Standard Oil Co. of California

(Effective March 11, 1930)

Gravity	Signal Hill Seal Beach Alamitos Heights Huntington Beach Inglewood* Olinda-Brea Canon*	Athens Rosecrans Dominguez	Elwood Terrace	Torrance Richfield	Whittier La Habra	Montebello	Coyote	Santa Fe Springs	Newhall McKittrick Kern River	Midway-Sunset Elk Hills Buena Vista Hills Lost Hills	Coalinga	Wheeler Ridge	Ketteleman Hills	Orcutt (Santa Maria) (Union Oil Co.)	Santa Paula (Ventura) (Union Oil Co.)	Ventura Avenue (Associated Oil Co.)
14–14.9**	$0.70	....	....	$0.70	$0.70	$0.70	$0.70	....	$0.55	$0.55	$0.55	$0.55	....	$0.55	$0.70	$0.70
15–15.9	.70	....		.70	.70	.70	.70	....	.55	.55	.55	.55		.55	.70	.70
16–16.9	.70	....		.70	.70	.70	.70	....	.55	.55	.55	.55	$1.65	.55	.70	.70
17–17.9	.70	....		.70	.70	.70	.70	....	.55	.55	.55	.55	for	.55	.70	.70
18–18.9	.76	....		.76	.76	.71	.76	....	.55	.62	.62	.62	55°	.65	.75	.76
19–19.9	.82	....		.82	.82	.77	.82	....	.55	.70	.70	.70	gravity	.70	.80	.82
20–20.9	.88	....		.88	.87	.83	.87	....	....	.78	.78	.78	and	.78	.85	.88
21–21.9	.94	....	F. o. b. ship	.94	.93	.90	.93	.92	....	.86	.86	.86	over	.90	.90	.91
22–22.9	1.00	....	....	1.00	.98	.97	.98	.95	....	.94	.94	.94	....	.95	.97	.94
23–23.9	1.07	....	....	1.07	....	1.05	1.04	1.01	....	1.02	1.02	1.02	....	1.02	1.05	1.00
24–24.9	1.14	1.14	....	1.14	....	1.11	1.10	1.07	....	1.09	1.07	1.07	....	1.10	1.08	1.07
25–25.9	1.21	1.19	....	1.21	....	1.17	1.16	1.13	....	1.16	1.12	1.12	....	1.18	1.13	1.14
26–26.9	1.28	1.24	....	1.28	....	1.23	1.23	1.19	....	1.23	1.17	1.17	....	1.26	1.18	1.21
27–27.9	1.35	1.29	....	1.35	....	1.29	1.30	1.25	....	1.30	1.23	1.22	....	....	1.23	1.28
28–28.9	1.42	1.34	....	1.42	....	1.35	1.37	1.31	....	1.35	1.27	....	....	....	1.28	1.35
29–29.9	1.46	1.39	....	†1.46	....	1.38	1.41	1.37	....	1.41	1.31	....	....	....	1.33	1.39
30–30.9	1.50	1.45	....	†1.50	....	1.41	1.45	1.43	....	1.47	1.35	....	....	....	1.39	1.43
31–31.9	1.55	1.51	....	....	....	....	....	1.49	....	1.53	1.39	....	....	....	1.45	1.48
32–32.9	1.60	1.57	....	....	....	....	....	1.55	....	1.59	1.43	....	....	....	1.51	1.53
33–33.9	....	1.64	....	....	....	....	....	1.60	....	1.65	1.47	....	....	....	1.58	1.59
34–34.9	....	1.71	1.32	....	....	....	....	1.65	....	††1.71	1.51	....	....	....	....	1.65
35–35.9	....	1.78	1.39	....	....	....	....	1.70	....	††1.77	1.55	....	....	....	....	1.71
36–36.9	....	1.84	1.46	....	....	....	....	1.75	....	....	....	....	....	....	....	....
37–37.9	....	1.90	1.53	....	....	....	....	1.80	....	....	....	....	....	....	....	....
38–38.9	....	1.96	1.60	....	....	....	....	1.85	....	....	....	....	....	....	....	....
39–39.9	....	2.02	1.66	....	....	....	....	1.90	....	....	....	....	....	....	....	....
40–40.9	....	2.08	1.72	....	....	....	....	....	....	....	....	....	....	....	....	....
41–41.9	....	2.14	1.78	....	....	....	....	....	....	....	....	....	....	....	....	....
42–42.9	....	2.20	1.84	....	....	....	....	....	....	....	....	....	....	....	....	....

*Inglewood prices run only to 28.9 gravity; Olinda-Brea Canon to 31.9 gravity.
†Richfield crude only. ††These two grades apply on Lost Hills only.
**Standard does not contract for crude testing below 14 gravity, but pays 45c per barrel when purchased

REFINERS' and COMPOUNDERS' SUPPLIES

Following are average market prices for materials used by refiners and compounders effective on the date shown.

Refiners' Supplies

	Apr. 21	Apr. 14
Soda Ash light 58% bags, cwt.	$1.32	$1.32
Silicate of Soda 60 deg. drums, cwt.	$1.55	$1.55
Silicate of Soda 40 deg. tank cars, cwt.	$0.60	$0.60
Silicate of Soda 40 deg. drums cwt.	$0.80	$0.80
Sal Soda wks.	$1.00–1.05	$1.00–1.05
Caustic Soda 76% solid, cwt...	$2.90	$2.90
Sulfuric Acid 60 deg. tank cars, f.o.b. shipping point per ton	$11.00	$11.00
Oleum 20%, fuming sulfuric, tank cars, wks.	$18.50	$18.50
Sulfur, flowers of cwt.	$3.10–4.00	$3.10–4.00
Liquid Chlorine, tank cars, wks. lb.	3.50–5.00	3.50–5.00

Compounders' Supplies

	Apr. 21	Apr. 14
Vegetable Oils		
Linseed carloads, spot.....lb.	14.20	14.20
Tanks, spot	13.40	13.40
Soya Bean, Tank, coast. lb.	9.50	9.00–9.50
Oleic Acid		
Distilled, tanks.....lb.	9.25–9.50	9.25–9.50
Distilled, bbls.....lb.	10.125-10.375	10.125-10.375
Saponified, tanks.....lb.	9.25	9.25
Saponified, bbls.....lb.	10.125–10.625	10.125-10.625
Lard Oils		
Prime Winter Strained....lb.	13.25	13.25
Extra Winter Strained....lb.	11.75	11.75
Extra.....lb.	11.50	11.50
Extra No. 1.....lb.	11.00	11.00
No. 1.....lb.	10.50	10.50
No. 2.....lb.	10.25	10.25
Tallow oil.....lb.	10.00	10.00
Neatsfoot Oil		
Pure, bbls.....lb.	13.00	13.00
Extra, bbls.....lb.	11.25	11.25
No. 1 bbls.....lb.	11.00	11.00
Cold Pressed.....lb.	17.50	17.50
Fish Oils		
Menhaden Oil		
Light Pressed.....gal.	63–65	63–65
Light Pressed, tank cars, N. Y.....gal.	53	53
White bleached.....gal.	67	67
Yellow bleached.....gal.	61	61
Whale, extra winter bleached, ...gal.	85	85
Naval Stores		
Steam, distilled turpentine, N. Y.....gal.	51	51
Steam distilled turpentine, Savannah.....gal.	45	45
Gum turpentine, N. Y....gal.	56.50	56.50
Gum turpentine, f.o.b. cars Savannah.....gal.	53	53
Wood Rosin, N.Y.....gal.	$7.30	$7.30
Wood Rosin F, Savn'h...bbl.	$6.50	$6.50
Gum Rosin B, N. Y.....bbl.	$7.60	$7.60
Gum Rosin B, f.o.b. cars Savannah.....bbl.	$6.50	$6.50
Rosin oil, pure.....gal.	58	58
Rosin oil, compounded...gal.	58	58
Pine Tar		
Kiln burnt.....bbl.	$13.00–14.00	$13.00–14.00
Retort.....bbl.	$13.50–14.50	$13.50–14.50
Alcohol		
Denatured Formula 5, in bbls., per gal.....	51–55	51–55

OIL STOCKS AND FINANCES

National Petroleum News

New Sinclair Stock to Enable Expansion or Mergers

CLEVELAND, April 21

SINCLAIR Consolidated Oil Corp. is planning expansion and possible consolidation. This became known in the annual report to stockholders, which announced directors had approved an increase in the authorized no par common stock from 10,000,000 shares to 20,000,000 shares. The increase is subject to the approval of stockholders.

"These shares," it was announced, "may be issued for properties or in connection with consolidations with other corporations or for cash, or for other corporate purposes as the board of directors may consider for the best interest of the corporation."

The additional stock would place the corporation in position to proceed with a consolidation with the Prairie Oil & Gas Co. and the Prairie Pipe Line Co., a merger that has been talked about for many months. The gossip in oil circles is that the corporation's 50 per cent interest in the Sinclair Pipe Line Co. and the Sinclair Crude Oil Purchasing Co. may be sold to the Standard Oil Co. of Indiana, owner of one half interest in each company. Standard of Indiana this year increased its authorized capital stock and is in position to proceed with such a deal.

Sinclair netted $16,599,037 in 1929, a gain of $3,151,690 over 1928 net. Earnings after depletion, depreciation, amortization and dividends on the preferred stock were $2.81 a share on the no par common stock, compared with $2.70 a share in 1928.

Gross sales in 1929 amounted to $199,268,129, a gain of $15,703,134. The corporation's subsidiaries did a larger business in all the major branches except natural gasoline manufacture which fell more than 3,000,000 gallons for the year but still remained close to 300,000 gallons daily output.

Crude oil production averaged 44,334 barrels daily, compared with 37,238 barrels daily in 1928 and a large quantity was shut in during the year, H. F. Sinclair, chairman, reported to stockholders. Mr. Sinclair attributed the decline in natural gasoline output to the curtailment in crude oil production.

Important improvements were made in refining facilities, Mr. Sinclair wrote, to meet the increasing demand for the company's branded products.

A comparative summary of the company's major operations the last three years follows:

	1929	1928	1927
Net crude oil production in U. S. (bbls.)	16,181,960	13,629,075	14,704,201
Net crude oil production in Mexico (bbls.)	2,442,308	2,393,718	2,765,416
Net casinghead gasoline production (gals.)	106,323,408	109,664,085	79,566,923
Crude oil run through refineries (bbls.)	35,728,626	33,433,489	30,309,721
Gasoline sold (gals.)	886,934,153	876,841,681	791,392,154
Oil cargoes transported by ocean tank steamships (bbls.)	19,140,982	18,897,120	17,920,810
Sinclair Pipe Line Co. (50% owned)—crude oil deliveries (bbls.)	40,576,615	37,092,018	32,253,191
Sinclair Crude Oil Purchasing Co. (50% owned) net amount of crude oil on hand Dec. 31 (bbls.)	36,445,949	38,502,392	36,036,053

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Financial Notes

Cumberland Pipe Line Co.—Extra dividend of $14 a share payable June 16 was declared in accord with the company's policy to distribute assets no longer needed in the business since the decline in Kentucky production. In 1928 the company reduced its capital stock one half to $1,500,000 and paid a special dividend of $15 a share Sept. 15, 1928. Last year it paid an extra of $4 a share March 15 besides the regular dividends at 8 per cent.

Panhandle Producing & Refining Co.—Annual meeting postponed to May 15.

Texas Pacific Coal & Oil Co.—Thomas R. Hall elected a director to fill vacancy caused by resignation of George N. Armsby. Other directors were re-elected.

Universal Consolidated Oil Co.—All directors re-elected at annual meeting.

Venezuelan Petroleum Co.—Quarterly dividend of 5 cents a share due at this time has been passed.

Rio Grande Oil Co.—Plans reported underway for construction of marine terminals at San Diego, San Francisco, Seattle, Portland, and Vancouver.

Southern Pipe Line Co.—Special dividends totaling $81 a share, have been paid since the par value of the capital stock was reduced from $100 to $10 a share. Latest special is $5 a share payable June 2.

Warner Quinlan to Vote On Capital Increase

NEW YORK, April 18.—Warner Quinlan Co. stockholders at their annual meeting May 5 will vote on a proposal to increase the authorized capital stock from 1,000,000 to 1,500,000 no par shares.

The company is offering stockholders rights to subscribe to additional stock in the ratio of one share at $18 for each five shares already held. On completion of this financing the company will have outstanding 759,537 shares. Proceeds of the issue amounting to approximately $2,278,000, will be used to increase working capital and reduce loans incurred in the last year acquiring service station sites.

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Transactions in Oil Shares on New York Stock Exchange

1928 High	1928 Low	1929 High	1929 Low	Listed Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions Week Ended April 19 Sales	First	High	Low	Last	Change
43⅞	27⅛	42⅝	17½	(sh) 992,075	N.P.	Amerada Corp	50cQ	Jan. 31, 30	8,900	27	27⅜	25⅝	26¾	+ ⅛
85	51¼	64¾	12½	(sh) 209,180	N.P.	American Republics Corp	....	.....	1,600	34⅜	35⅞	32⅝	35	+ 1⅛
53⅜	37½	47¼	32½	$56,000,000	$25	Associated Oil	50cQ	Dec. 31, 29	40	48	48	48	48	— ½
62½	50	77⅞	30	50,000,000	25	Atlantic Refining	‡25cQ	Mar. 15, 30	49,600	49⅞	49⅞	45¼	46	— 3⅜
53	20	49⅛	20	47,261,125	25	Barnsdall Corp. A	50cQ	Feb. 7, 30	34,400	31⅞	31⅞	30⅛	30⅝	— 1⅛
51¼	20	49	38⅛	300,525	25	do B	50cQ	Feb. 7, 30	.....	.....	.....	.....	.....	.....
24½	12¼	32⅞	13	(sh) 956,075	N.P.	Beacon Oil	....	.....	1,900	19⅝	19⅝	19⅛	19¼	— ⅛
36	25¼	34½	25	$51,524,150	$25	California Petroleum	....	Jan. 1, 29	.....	.....	.....	.....	.....	.....
.....	.....	37¾	18	(sh) 4,634,163	N.P.	Continental Oil (Delaware)	.....	.....	21,500	28⅝	28⅞	27½	27¾	— ⅛
94⅞	68	94¾	42¼	21,031,400	100	General Asphalt	$1Q	Mar. 15, 30	19,800	68¾	69½	66	66¼	— 3⅛
141	110⅛	138	103½	6,628,200	100	do pfd	$1.25Q	Dec. 2, 29	.....	.....	.....	.....	.....	.....
67	79	109⅜	23	25,000,000	100	Houston Oil	.....	.....	88,300	104⅝	114	102⅜	111⅜	+ 7⅛
38⅜	21¾	39¼	17¾	(sh) 1,333,157	N.P.	Independent Oil & Gas	50cQ	Jan. 31, 30	13,900	29⅞	30¼	29	29⅛	— ⅜
39⅝	9	53	13	$4,299,190	$10	Indian Refining	....	Dec. 15, 20	68,200	23¼	23½	21	22¾	— ½
37¼	8½	51¼	11½	4,550,110	10	do ctfs	.....	.....	25,600	21	21⅜	19	20⅞	— ½
185	140	165	160	1,977,700	100	do pfd. new	$1.75Q	Jan. 1, 30	.....	.....	.....	.....	.....	.....
39⅛	27⅜	38⅜	16½	3,992,387	N.P.	Lago Oil & Transport	....	May 2, 27	3,200	25	25	24⅜	25	0
119¾	9⅜	18	7	(sh) 1,187,298	N.P.	Louisiana Oil Refining	.....	.....	3,200	10⅛	10⅜	10	10¼	— ⅛
96	78	100¼	80	$4,000,000	$100	do pfd	$1.62½	Feb. 15, 30	20	85	85	85	85	— 4
25½	12½	18½	5⅛	(sh) 330,000	N.P.	Maracaibo Oil	.....	.....	1,100	9¼	9¼	8⅛	8⅛	— ⅛
360	250	295	176	$45,942,800	$100	Mexican Petroleum	$3Q	Jan. 20, 30	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	12,000,000	100	do pfd	$2Q	Jan. 20, 30	.....	.....	.....	.....	.....	.....
73	4⅝	69⅝	9¼	(sh) 995,500	N.P.	Mexican Seaboard	....	Nov. 15, 24	51,100	33⅝	34	32¼	33½	— ⅛
44½	25⅛	39⅞	22⅛	(sh) 1,857,461	N.P.	Mid-Continent	50cQ	Feb. 15, 30	6,000	31⅝	32	30½	30½	— 1
120½	103¼	121	120¼	$6,718,000	$100	do pfd	$1.75Q	Dec. 1, 29	.....	.....	.....	.....	.....	.....
7⅜	2⅜	5⅛	¾	23,849,720	* 10	Middle States	....	July 1, 23	.....	.....	.....	.....	.....	.....
5⅛	1½	3⅝	⅛	5,950,500	10	do ctfs	....	.....	38,400	1¾	2¼	1¾	1¾	0
2¼	1	1½	⅛	(sh) 3,500,000	N.P.	Pacific Oil	....	.....	2,100	1⅛	1¼	1⅛	1⅛	0
55½	38¼	69	40¼	$50,000,000	$50	Pan American P. & T	....	Oct. 20, 27	100	56	56	56	56	— 1⅞
58⅞	37⅜	69¼	40½	121,101,400	50	do B	....	Oct. 20, 27	3,700	57½	58⅞	55½	58⅞	+ 1⅞
28⅜	15½	17½	13½	(sh) 400,000	N.P.	Pan. American Western B	....	Jan. 30, 27	.....	.....	.....	.....	.....	.....
21⅜	11⅜	15¼	3	199,370	N.P.	Panhandle P. & R	....	.....	13,600	7⅝	8¾	7¾	8¾	+ 1
106¼	70	76	47½	$2,935,200	$100	do pfd	....	July 2, 23	200	55¾	57	55¾	57	0
53⅞	35¼	47	24¼	(sh) 2,406,803	N.P.	Phillips Petroleum	50cQ	Apr. 1, 30	29,100	40⅛	40⅛	38⅛	39⅛	— ⅜
5¼	½	3⅜	1	$29,622,925	$25	Pierce Oil Corp	....	.....	8,100	2⅛	2⅜	2	2	— ⅛
50	16¼	51½	20	15,000,000	100	do pfd	....	Feb. 1, 22	10,400	43	48⅛	43	44	+ 2⅜
6⅝	3½	5⅞	½	(sh) 2,500,000	N.P.	Pierce Petroleum	.....	.....	26,900	6¼	6⅜	5¾	5¾	— ⅜
64⅝	59½	65⅝	40½	$60,636,450	$25	Prairie Oil & Gas	50cQ	Mar. 31, 30	1,600	51⅝	52¼	50⅞	51	— 1¼
.....	.....	65	45	101,250,000	25	Prairie Pipe Line	‡75cQ	Mar. 31, 30	1,900	56½	56½	55	56	— ¼
29⅞	16	25⅞	4	37,450,850	50	Producers & Refiners	....	Sept. 15, 23	900	10½	11¼	10½	11¼	+ ¼
49⅝	41	46⅝	25½	2,845,350	50	do pfd	....	May 1, 25	.....	.....	.....	.....	.....	.....
31¼	19	30¾	20	75,959,255	25	Pure Oil Co	37½cQ	Mar. 1, 30	19,100	25¾	26	25½	25¾	0
119	108	116	108	13,000,000	100	do 8% pfd	$2Q	Apr. 1, 30	10	113⅝	113⅝	113⅝	113⅝	— ⅛
56	23½	49⅝	20	47,127,725	25	Richfield Oil	50cQ	Feb. 15, 30	19,100	26⅝	26¾	25⅜	25½	— ⅜
.....	.....	42½	15	(sh) 1,200,000	N.P.	Rio Grande Oil Co	50cQ	Jan. 25, 30	9,900	23⅝	23⅞	23⅛	23⅜	+ ⅛
64	44⅝	64	43⅛	(sh) 546,646	$13.40	Royal Dutch N. Y. shares	$1.3415	Feb. 5, 30	9,100	54⅜	54⅝	53⅞	54⅛	— ⅜
57½	39⅜	55¾	22⅝	(sh) 65,203,000	£2	Shell Transport & T	97c	Jan. 28, 30	.....	.....	.....	.....	.....	.....
39⅝	23¼	31⅜	19	12,254,979	N.P.	Shell Union Oil	35cQ	Mar. 31, 30	12,900	24¼	24⅜	23½	24	— ⅛
27¼	18⅛	40⅛	15	$8,357,280	$10	Simms Petroleum	40cQ	Mar. 15, 30	14,700	33¾	34	32¼	33½	+ ⅝
46¾	17⅜	45	21	5,494,095	N.P.	Sinclair Consolidated	50cQ	Jan. 15, 30	29,100	31	31	29½	29⅞	— 1⅛
110	102½	111¾	103	$16,025,200	$100	do pfd	$2Q	Feb. 15, 30	.....	.....	.....	.....	.....	.....
42⅝	25	46½	28	27,396,590	25	Skelly Oil Co	50cQ	Mar. 15, 30	12,900	40⅛	40½	38¾	39⅛	— 1¼
80	53	81⅞	51½	(sh) 13,016,435	N.P.	S. O. California	62½cQ	Mar. 15, 30	19,400	71¼	71½	69	70⅛	— ⅜
59¾	37¾	83	48	$612,095,850	$25	S. O. New Jersey	‡25cQ	Mar. 15, 30	169,000	77⅝	79⅜	77	78½	— ½
45½	28¾	48⅛	31¼	434,094,575	25	S. O. New York	40cQ	Mar. 15, 30	28,100	37⅜	37⅜	35⅝	36⅜	— ⅞
77	31½	84¾	53	(sh) 1,297,847	N.P.	Sun Oil	‡25cQ	Mar. 15, 30	1,500	67⅛	67½	67	67	— ½
110	110	105½	100	$5,000,000	$100	do pfd	$1.50Q	Dec. 2, 29	110	104	105	103¾	104	— ½
14⅛	2⅛	24	5¼	(sh) 1,304,698	N.P.	Superior Oil Corp	....	Dec. 20, 20	21,500	7⅞	8¾	7⅞	8	+ ⅛
74⅝	50	71⅞	50	$211,082,925	$25	The Texas Corp	75cQ	Apr. 1, 30	12,400	58⅛	58¾	57	57¼	— 1½
26⅜	12⅛	23⅞	9	8,380,340	10	Texas Pacific Coal & Oil	2½%	Dec. 31, 29	8,100	12⅜	12⅝	12⅛	12¼	— ¼
41½	19⅝	40	14	(sh) 2,179,275	N.P.	Tide Water Oil Co	20cQ	Mar. 31, 29	.....	.....	.....	.....	.....	.....
100⅛	86¾	97½	85⅛	$20,321,000	$100	do 5½% pfd	$1.25Q	Feb. 15, 30	1,000	94½	94⅞	94½	94⅞	+ 1⅜
25	14¾	23½	10	(sh) 4,877,976	N.P.	Tide Water Associated	30cQ	Feb. 15, 30	17,200	17	17¼	16⅜	16⅜	— 1⅛
91¾	81⅞	90⅞	74⅛	$72,989,200	$100	do pfd	$1.50Q	Apr. 1, 30	400	86¾	86¾	86¾	86¾	— ⅝
14½	6¾	21	5⅛	(sh) 3,842,029	N.P.	Transcontinental Oil	.....	.....	108,600	19½	*21	19¼	20⅞	+ 1⅞
58	42⅜	54½	41⅜	$40,858,375	$25	Union Oil of California	‡50cQ	Feb. 10, 30	5,000	47⅛	48⅞	47⅛	47⅛	+ ⅞
128⅛	110	163¾	33	31,101,200	100	Union Tank Car Co	$1.25Q	Mar. 1, 30	1,600	37½	37½	36	36	— 2½
44⅛	26	42⅞	15	(sh) 488,359	N.P.	Warner Quinlan	25cQ	Apr. 3, 30	65,600	26¾	26¾	21	22¼	— 4¾
38	20⅛	38	25	(sh) 490,000	N.P.	White Eagle Oil & Refining	50cQ	Jan. 20, 30	.....	.....	.....	.....	.....	.....
22⅛	17¼	29¾	11½	(sh) 428,967	N.P.	Wilcox Oil & Gas	....	May 10, 28	600	18	18½	18	18⅛	+ ⅛

*New High †New Low xEx-Dividends ‡Also Extras s-Stock Total Sales 1,122,280

Oil Company Earnings

Year	1929	1928
Imperial Oil, Ltd	$26,350,309	$22,963,264
Lago Oil & Trans.	2,816,144	2,066,502
Sinclair Consolidated	16,599,037	13,447,347
First quarter	**1930**	**1929**
Atlantic Refining	$1,124,300	$3,892,600

RICHMOND, Va.—A modern bulk plant, with railroad spur track and pipe line leading to the Southern Railway docks on the James River, was opened here recently by the Dominion Oil Co., distributor of Shell products. The plant cost approximately $125,000.

Storage capacity totals 2,500,000 gallons. The Dominion company was organized in 1922 by O. D. Dennis and Benjamin Dennis, Jr. It has 52 service stations in Richmond and vicinity. The company became a Shell distributor last November.

Cities Service Drops European Deal

NEW YORK, April 19.—Cities Service Co.'s subsidiary, Cities Fuel & Power Co., has notified North European Oil Corp. that it will not exercise its option to acquire an interest in that company.

The North European company holds 2,000,000 acres of prospective oil lands in a triangular area in the region between Hamburg, Bremen and Hanover, Germany.

It was believed deep drilling might uncover oil in commercial quantities. Small production has been obtained from shallow wells.

Cities Service Earnings Increase

CLEVELAND, April 21.—Cities Service Co. reports earnings of $42,130,017 available for reserves and stock in the 12 months ended March 31, compared with $30,220,493 in the preceding 12 months. Net to common stocks and reserves was $35,095,291, compared with $23,454,949, in the respective periods.

Pittsburgh Stock Exchange

Transactions Week Ended April 17, 1930

	Sales	High	Low	Last	Change
Ark. Nat. Gas	160	16	15½	15½	— ½
do pfd	890	8	7⅞	7⅞	0
Devonian Oil	550	10	9¾	10	+ ¼
Leonard Oil	15,010	4½	4	4	— ⅜
Lone Star Gas	43,513	56½	49¼	54½	+5½
do pfd	205	*110	109	110	+ ¾
Plymouth Oil	420	26	25½	25¾	0
Pgh. Oil & Gas	50	3	3	3	0
Phoenix Oil	1,500	.60	.55	.55	—.20
Shamrock Oil & Gas	890	26	23	24	—1
do 6s	$13,000	103	101¾	101¾	+1¾

*New high.

Pittsburgh Curb Market

Transactions Week Ended April 17, 1930

	Sales	High	Low	Last	Change
Arkansas Gas A	450	15⅜	14¾	14¾	—1¼
Oklahoma Gas 6s	$2000	94	93	93	....

Aviation Gasoline Prices

Following are tank wagon prices of aviation gasoline in principal marketing territories and include state and municipal taxes:

S. O. NEW JERSEY

Prices in Effect April 21, 1930

	T.W.	Tax	Total
Newark, N. J.	15.4	2	17.4
Baltimore, Md.	12.5	4	16.5
Washington, D. C.	15.5	2	17.5

*S. O. OHIO

Thru Ohio	17	4	21

*Discounts: For airport delivery only: 2,000 gals. or over per month, 1c per gal.; 6,000 gals. or over per month, 2c; 12,000 gals. and over per month, 3c.

*S. O. INDIANA

Chicago	17	3	20
Indianapolis, Ind.	17.2	4	21.2
Detroit, Mich.	17.8	3	20.8
Milwaukee, Wis.	17.1	2	19.1
Minneapolis, Minn.	18.2	3	21.2
St Louis, Mo.	16.4	2½	18.9
Kansas City, Mo.	16.9	3	19.9
Fargo, N. D.	19.9	3	22.9
Huron, S. D.	18.3	4	22.3
Wichita, Kan.	15.8	3	18.8

*In S. O. Indiana territory, buyer pays state and city taxes on aviation gasoline, and if he can get a refund from the state, he does so.

*S. O. LOUISIANA

New Orleans, La.	16	5	21
Nashville, Tenn.	18	5	23
Memphis, Tenn.	17	5	22

*2c per gal. discount off above t.w. prices to dealers and commercial consumers.

S. O. NEBRASKA

*Omaha	18.25	4	22.25

*2c per gal. refund to resellers.

CONTINENTAL OIL CO.

*Denver, Col.	16	4	20
Pueblo, Col.	17	4	21
Grand Junction, Col.	26	4	30
Casper, Wyo.	18	4	22
Cheyenne, Wyo.	19.5	4	23.5
Butte, Mont.	22.5	5	27.5
Helena, Mont.	25.5	5	30.5
Salt Lake City, Utah	20	3.5	23.5
†Albuquerque, N. M.	19	5	24
Boise, Ida.	22	5	27

*1c per gal. discount to dealers at Denver. †2c per gal. discount to dealers at Albuquerque.

*S. O. CALIFORNIA

Phoenix, Ariz.	17	4	21
Los Angeles, Cal.	19.5	3	22.5
San Francisco, Cal.	20	3	23
Reno, Nev.	24	4	28
Portland, Ore.	19.5	4	23.5
Seattle, Wash.	19.5	3	22.5
Spokane, Wash.	23.5	3	26.5

*4c per gal. discount off t.w. price of gasoline to customers taking tank truck delivery, through S. O. California territory, except 1c discount at Phoenix.

Buys Outstanding Stock In Gasoline Company

TULSA, April 19.—E. I. Hanlon and associates have just completed a deal whereby they acquired all of the outstanding capital stock of Hanlon Gasoline Co., formerly affiliated with the Chestnut and Smith group of gasoline companies. The properties covered by the trade include three gasoline plants, one at Breckenridge, one at Parks, and one at Eliasville, Texas, with combined capacity of 60,000,000 feet of gas, several oil and gas producing properties and lease holds.

These same interests organized in November 1929, the firm of Hanlon-Buchanan, Inc. That firm, a short time ago, completed construction of a large processing plant and terminal facilities at Good Hope., La. (New Orleans Port) where it is producing a highly stabilized natural gasoline which is being moved by tankers in export and coastwise trade.

The company has just been granted the trade STA-VOL-ENE, under which their product will be marketed in the future. It is claimed for STA-VOL-ENE that it has maximum effective volatility, together with sufficient stability to enable handling in bulk at atmospheric temperature and pressure with no more loss than is experienced with ordinary motor fuels.

In addition to developing a market for natural gasoline in foreign countries through the means of cargo transportation, the company is actively engaged in developing by-products of natural gasoline manufactured from propane and the butanes extracted in the manufacture of STA-VOL-ENE.

It is understood the acquisition of Hanlon Gasoline Co., by these interests marks the beginning of an expansion program by them in the manufacturing of natural gasoline.

Kerosene Consumption Gained 5 Per Cent

NEW YORK, April 18.—A gain of 23,500,000 gallons, a little over five per cent, in kerosene consumption was reported in 1929 over 1928 in 14 states, according to reports under inspection laws, the American Petroleum Institute says.

Kerosene consumed in the 14 states in 1929 totaled 460,817,000 gallons.

The largest increase was 14,454,000 gallons, in Minnesota. The figures there include distillates used for domestic heating. Consumption totaled 78,178,000 gallons.

The second largest gain was in Missouri, 7,857,000 gallons, to a total in 1929 of 59,863,000 gallons.

Nebraska was third with a gain of 4,766,000 gallons.

The largest decrease was in Michigan, 5,333,000 gallons, to 45,653,000 gallons total for 1929.

Here are the kerosene consumption figures, in gallons, in the 14 states for 1929 and 1928:

	1929	1928
Alabama	18,331,000	17,913,000
Arkansas	16,677,000	17,824,000
Colorado	7,477,000	7,847,000
Florida	24,144,000	26,354,000
Georgia	22,553,000	22,690,000
Kansas	58,976,000	56,348,000
Michigan	45,653,000	50,986,000
Minnesota	78,178,000	63,724,000
Missouri	59,863,000	52,006,000
Nebraska	37,416,000	32,650,000
North Dakota	15,441,000	16,789,000
Oklahoma	42,166,000	40,583,000
South Carolina	17,260,000	15,855,000
South Dakota	16,682,000	15,815,000

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Standard Oil Stocks on New York Curb

1929 High	1929 Low	1929 High	1929 Low	Outstanding Capital	Par Value	Stocks	Div Rate	Last Paid	Transactions Week Ended April 19 Sales	First	High	Low	Last	Change
22⅜	14⅞	18¾	14¼	£4,126,460	£ 1	Anglo-American Oil	36c	June 5, 29						
21¼	15	18	12¼	.....	....	do certificates	36c	June 5, 29	5,900	15¼	17¾	15¼	17⅝	+ 2⅜
20½	14⅜	17	11	.....	£ 1	do ctfs. non-voting	36c	June 5, 29	3,500	15⅜	17¾	15⅜	17½	+ 2
5	1¼	2½	½	(sh) 500,000	N.P.	Atlantic Lobos	.....	.....	100	1	1	1	1	0
9¾	3¼	4⅛	1	$10,000,000	$50	do pfd	.....	.....						
56	44½	46½	23	$1,000,000	25	Borne-Scrymser	$1 S.A.	Oct. 15, 29	100	23	24¾	†23	24¾	+ 2½
76	58	74¼	55	10,000,000	50	Buckeye Pipe Line	$1Q	Mar. 15, 30	900	58	58	57	58	— 1
161	117¼	210	130	3,000,000	25	Chesebrough Mfg	‡$1Q	Mar. 31, 30						
23	16	29	8⅛	36,123,350	10	Continental Oil	.....	Dec. 15, 27	1,100	15	16¾	15	16¾	— ⅛
17½	9½	11¾	5⅝	.....	N.P.	Creole Petroleum	.....	.....	3,500	6⅝	6¾	6½	6½	— ⅛
82	67	95	40	1,500,000	50	Cumberland Pipe Line	$1Q	Mar. 15, 30	1,850	45	65¾	45	65	+24
88	64½	70½	42	5,000,000	100	Eureka Pipe Line	$1Q	Feb. 1, 30	100	43	43¼	43	43¼	+ ¼
13	4¼	7	3	16,000,000	100	Galena Signal Oil	.....	June 30, 25	400	3⅞	3⅞	3½	3⅞	+ ⅜
86	26	90	73½	4,000,000	100	do new pfd	.....	June 30, 26	250	80½	81	80½	81	+ 4¾
89¾	35	88	71½	2,000,000	100	do old pfd	.....	June 30, 26	25	76¼	76¼	76¼	76¼	+ ¼
114¾	59½	128	74⅛	73,685,700	25	Humble Oil & Refining	50cQ	Apr. 1, 30	8,900	116⅛	116⅛	114⅝	114⅝	— 1⅜
290½	176½	340½	260	20,000,000	100	Illinois Pipe Line	$4.50	Mar. 25, 30	50	308	308	308	308	+ 13
104	56¾	41	22	(sh) 26,421,768	N.P.	Imperial of Canada	12½cQ	Mar. 1, 30	4,200	28⅝	28⅝	27½	28	— ⅜
91⅞	74⅝	41⅞	26	$1,000,000	$10	Indiana Pipe Line	‡50cQ	Feb. 15, 30	400	39	39	38⅝	38⅝	— ⅜
55	35	37½	15	(sh) 14,247,088	N.P.	International Petroleum	25c	Mar. 15, 30	8,100	23⅜	23⅜	22½	22⅝	— 1⅜
32⅜	19⅜	25⅞	10½	$6,363,350	12.50	National Transit Co	25cQ	Mar. 15, 30	4,800	20	20	19½	19½	— ½
75	38½	85	72	1,000,000	10	New York Transit	‡40cQ	Jan. 15, 30						
....	....	....	....	.....	....	do new	.....	.....	200	16	16½	16	16½	+ 2
69	56½	63	40¼	2,000,000	50	Northern Pipe Line	$2 S.A.	Jan. 2, 30	1,150	42¾	42¾	†40¼	42¼	— ½
83½	58½	79⅞	64⅜	60,000,000	25	Ohio Oil Co	‡50cQ	Mar. 15, 30	900	72¼	72⅜	71	71⅜	— ⅜
84	28	44⅛	18⅝	10,000,000	25	Penn Mex. Fuel	$1	Dec. 14, 29	1,800	31⅛	31⅞	30⅛	30½	+ ⅜
220	167	50	23⅞	4,000,000	25	Solar Refining	$1.25 S.A.	Dec. 20, 29	200	23⅞	23⅞	†23⅞	23⅞	— 1
19	12	23½	13	1,000,000	10	Southern Pipe Line	$1	Mar. 1, 30	1,100	16⅞	17½	16⅞	17½	+ 2½
71⅜	36¾	60¼	35⅛	30,000,000	25	South Penn Oil	‡50cQ	Mar. 31, 30	1,300	44¼	44½	43⅜	43⅜	— ⅝
102	70	70	45	1,750,000	50	South West Pa. Pipe Lines	$1	Apr. 1, 30	100	50¼	51	50¼	51	+ 1
95⅞	70⅞	63	45	348,175,069	25	S. O. Indiana	62½cQ	Mar. 15, 30	11,500	58	58	56⅞	57	— ⅞
27¾	15	40	18	8,000,000	25	S. O. Kansas	50cQ	Mar. 15, 30						
49	44	46⅜	29	25,654,516	10	S. O. Kentucky	‡40cQ	Mar. 31, 30	3,400	35⅞	35⅞	35¼	35¼	— ⅜
54⅜	39⅞	50¼	40	4,649,225	25	S. O. Nebraska	‡62½cQ	Mar. 20, 30	600	48½	48½	47½	48¼	+ ⅜
34	71	129	60	14,000,000	25	S. O. Ohio	62½cQ	Apr. 1, 30	100	98	98	98	98	— 1⅜
25	116	125½	106	7,000,000	100	do pfd	$1.75Q	Mar. 1, 30	80	119	119	119	119	— ¼
23½	16	18	5⅛	861,466	25	Swan Finch	30c	Jan. 15, 29	....	....	....	....	....	....
111	72	133¾	75	126,154,000	25	Vacuum Oil	$1Q	Mar. 20, 30	5,700	93	93	90	91⅞	— 1

*New High †New Low ‡Also Extras.

Independent Oils on New York Curb

1928 High	1928 Low	1929 High	1929 Low	Par Value	Stocks	Transactions Week Ended April 19 Sales	First	High	Low	Last	Change
1½	.53	.72	.125	$5	Amer. Cons. Oilfields	13,700	¼	¼	⅜	¼	0
9½	3½	8⅝	1⅛	*N.P.	Amer. Maracaibo	10,400	2½	2¾	2¼	2¼	— ¼
4½	2¼	4¾	1	$10	Argo Oil						
3¾	3⅜	26	3¾	N.P.	Arkansas Nat. Gas	4,500	15½	15⅝	14⅞	15	— ¾
....	....	24¾	6½	N.P.	do A	38,400	15⅜	15⅝	14⅝	15	— ½
....	....	9	4	10	do pfd	200	8	8	8	8	+ ⅛
55	32¾	70	50	N.P.	British American Oil						
23⅞	3¾	4⅞	⅞	25c	Carib Syndicate	6,800	1⅝	1⅝	1⅜	1⅜	— ¼
....	....	68⅛	20	N.P.	Cities Service new	119,400	42	42	40¾	41⅝	— ⅜
103½	94½	99¼	84	100	do pfd	900	93	93	92⅜	93	+ ½
9⅜	8⅞	9¼	8	10	do pref. B	600	8¾	8¾	8½	8½	+ ⅛
97	88½	96	81	100	do pref. BB						
2¼	1	1½	¼	1	Colombia Syndicate	85,400	⅜	½	⅛	½	+ ⅛
17¾	9¾	15	3⅞	N.P.	Colon Oil	1,100	6¾	7¼	6¾	7¼	+ ⅜
8⅞	6¼	11⅜	2½	10	Consolidated Royal	100	4½	4½	4½	4½	— ⅛
....	....	135	42	N.P.	Cosden Oil Co	3,700	63½	65	60¼	60¼	— 2¾
....	....	82	55	....	do pfd	200	70	70	70	70	+ 5¼
3¼	.76	2½	¼	N.P.	Crown Central	400	¾	¾	¾	¾	— ⅛
15	6¾	11¾	4	N.P.	Crystal Oil						
50	48	51⅝	51⅝	$100	do pfd						
33½	8⅜	26	6½	N.P.	Darby Petroleum	8,900	11⅞	12½	11⅝	11⅞	— ⅛
2⅞	1	11	2	N.P.	Derby Oil & Refining	7,800	10⅜	11	9	10½	+ ½
21⅜	7½	54	5	N.P.	do pfd	250	52⅞	53¾	52⅞	53¾	— ¼
165	101⅛	209	115	$25	Gulf Oil Corp	9,800	156½	159⅛	155	156⅝	+ 1⅛
7½	5⅝	7½	1⅜	5	Homaokla Oil	900	4	4	4	4	+ ½
....	....	53½	5	$1	Indian Territory	42,700	52⅞	52⅞	45¾	46⅜	— 6⅝
3⅜	1	2⅞	⅜	10	Intercontinental Pet.	28,400	1¼	1⅜	1⅛	1⅝	+ ⅜
3	⅛	3⅝	1¼	N.P.	Kirby Petroleum	700	2⅞	2⅞	2⅝	2⅞	0
9⅜	5½	6¼	1	N.P.	Leonard Oil & Dev	8,300	4⅜	4½	3⅞	4	— ¼
43⅜	20	38⅞	18	N.P.	Lion Oil & Refg						
....	....	67⅞	28	N.P.	Lone Star Gas	24,400	50⅜	55⅞	49½	54½	+ 4½
1⅞	.50	1¼	¼	1	Magdalena Syndicate	3,800	¼	⅜	¼	⅜	+ ⅛
48½	32	38½	12	N.P.	Margay Oil	800	14½	14½	14½	14½	— 1½
8	2¾	7½	2	N.P.	Mexico-Ohio Oil	1,800	4	4¾	3½	4⅛	— ⅜
....	....	42	8	N.P.	Missouri-Kan. P. L.	14,800	29	29⅞	29	29⅝	+ ⅝
1¾	.76	1½	¼	1	Mountain & Gulf	4,400	¾	⅞	⅝	¾	0
28⅞	19½	22⅞	7	10	Mountain Producers	8,400	12	12⅛	11⅜	11⅜	— ⅝
....	....	43⅞	24	N.P.	Nat. Fuel Gas (new)	800	32½	32½	31⅜	32½	+ ½
5⅝	4¼	5	2¼	5	New Bradford	2	3	3¼	3	3⅛	+ ⅛
5½	3	3⅞	2¾	10	New England Fuel						
11⅞	7⅛	9⅜	2¼	1	New Mex. & Ariz	500	5⅝	5¾	5⅝	5⅝	0
15½	11½	24½	10⅛	25	New York Petrol	400	11⅜	11⅞	11⅜	11½	— ⅜
13¼	8⅛	18½	6¼	N.P.	North Cent. Texas	600	10¾	10¾	10	10½	— ½
....	....	19¼	8⅛	N.P.	Oil Stock, Ltd. A	1,300	10½	10⅜	10⅛	10⅜	+ ¼
....	....	18⅛	8½	N.P.	do B						
26¼	20	26⅝	12⅛	N.P.	Pacific Western Oil	3,100	18⅝	18¾	17½	17⅝	— ⅜
6	2¼	3½	½	N.P.	Pandem Oil	14,600	1⅞	2⅛	1¾	2	0
15⅝	8½	10½	2⅛	N.P.	Pantepec Oil	4,900	3⅛	3⅛	2¾	2⅞	+ ⅛
20	10⅜	25½	22½	$25	Paragon Refg. B ctfs.						
....	....	34½	17	N.P.	Petroleum Corp	8,700	25⅛	25¼	24½	24⅝	— ⅝
31⅜	26½	37	22	N.P.	Plymouth Oil	600	25	25½	25	25½	+ ⅛
18	8	16	9	25	Red Bank Oil						
13	4⅛	8½	1⅛	N.P.	Reiter-Foster	2,400	3¾	5⅜	3⅜	4½	+ ¾
31½	23¼	25½	19	$25	Richfield pfd	100	21⅝	21⅝	21⅝	21⅝	+ ⅜
....	....	29	13	....	Root Refining pfd	200	15⅜	15½	15⅜	15½	— ½
12	4⅜	11	3	N.P.	Ryan Consolidated	100	5½	5½	5½	5½	+ ½
7¼	5½	5⅞	1⅞	$10	Salt Creek Cons	300	2¼	2¼	2⅛	2⅛	— ⅛
35	23¼	25⅞	9	10	Salt Creek Prod	1,200	15	15	14⅛	14⅛	— ⅞
3½	1	2½	½	5	Savoy Oil						
40	27	33⅜	10	25	Shreveport El Dorado						
....	....	24	9	N.P.	Southland Royalty	2,600	10½	10⅝	10¼	10½	+ ¼
....	....	12	4	N.P.	Sunray Oil	15,400	9⅝	10	7⅞	7⅞	— 1½
....	....	23	7⅛	N.P.	Texon Oil & Land new	1,900	12	13½	12	12½	+ ½
22⅞	13	16⅞	11⅝	$10	Tidal Osage						
21¼	13⅛	16½	10⅛	10	do not-voting						
93¾	75	155	80	100	Transcontinental pfd						
74¼	18	81⅛	14	10	Venezeula-Mexico	900	14	15½	†14	14⅞	—55⅛
9⅛	4¾	6½	1⅜	3	Venezuelan Petrol	7,700	3½	3⅝	3⅛	3⅛	— ⅜
....	....	66	2¼	N.P.	White Star Oil						
8¼	4⅞	9⅛	2	1	Woodley Petroleum	400	3¼	3¼	3	3¼	— ¼
⅜	⅛	5⅜	¼	25	Y Oil & Gas	3,800	2¼	2½	2	2⅛	— ¼

*New High †New Low

New York Bonds

Week Ending April 18

	High	Low	Last	Change
Assoc. Oil gold 6s	103	102½	103	+ ½
Atlantic Refg. deb. 5s	103	101¾	102	0
Cal. Pet. 5s	99½	99¼	99¼	0
Cal. Pet. 5½s	101⅞	101⅞	101⅞	0
General Pet. 5s	102	101¾	102	+ ¼
Humble Oil & Refg. 5s	101	100½	101	+ ½
Humble Oil & Refg. 5½s	102	101⅝	102	+ ⅜
Pan Amer. P & T. 6s	103½	102¾	103½	0
Phillips Pet. 5½s	95¼	95	95	— ¼
Pure Oil 5½s	99½	99	99¼	— ¼
Richfield Oil Calif. 6s	96½	96⅛	96⅜	— ⅛
Shell Union Oil 5s	97½	97	97½	+ ⅜
Shell Union Oil 5s war.	100⅞	100¼	100½	+ ⅛
Sinclair Con. Oil 7s	104	103⅝	103¾	— ¼
Sinclair Con. Oil 6½s	102⅜	101¾	102½	+ ½
Sinclair Con. Oil 6s D	100½	100⅛	100⅛	— ⅛
Sinclair Con. Crude 5½s	100	99⅜	99⅞	+ ⅛
Sinclair Pipeline	98¼	98¼	98½	0
Skelly Oil 5½s	96	94	96	+1½
S. O. N. J. 5s	103½	103	103	— ⅜
S. O. N. Y. 4½s	97⅛	96½	96½	— ¼
Transcontinental Oil 6½s war	102¼	101¾	101¾	— ½
Transcontinental Oil 6½s Ex-war	98	96	97⅞	+2⅜
Union Oil of Calif. 5s C	100⅛	100	100⅛	+ ⅛
Warner-Quinlan 6s	95	90	90	0

New York Curb Bonds

Week Ending Apr. 18

	High	Low	Last	Change
Beacon Oil 6s '36	108	107	107¼	+ ⅝
Cities Serv. 5s '66	87¼	86¾	86¾	— ¼
Cities Serv. G. 5½s '42	88¾	88¼	88¾	+ ½
Cities Serv. G. P. 6s '43	95	95	95	0
Cont. Oil 5⅛s '37	97	96	96	—1
Empire O & R 5½s '42	88⅞	87⅞	87⅞	— ⅝
Gulf Oil 5s '37	102¼	101½	102¼	+ ¾
Gulf Oil 5s '47	102⅜	102	102⅜	+ ⅜
Indep. Oil 6s '39	109⅛	108¼	108⅜	+ ⅛
Pure Oil 5½s '40	97¾	97½	97¼	— ¼
Sun Oil 5½s '39	102	101¾	102	— ½
Union Oil of Calif. 5s '51	99¾	99½	99½	— ⅛
Valvoline Oil 7s '37	103½	103½	103½	+ ¼

Oil Dividends

	Amount	Payable	Stock of Record
Cities Service m	2½c	June 2	May 15
do stock m	½%	June 2	May 15
do pfd. m	50c	June 2	May 15
do pref. B m	5c	June 2	May 15
do pref. BB m	50c	June 2	May 15
Cumberland P.L. q.	$1	June 16	May 31
do extra	$14	June 16	May 31
Gilmore Oil Co. q.	30c	Apr. 30	Apr. 15
National Refining q.	37½c	May 15	May 1
Sinclair Cons. pfd. q.	$2	May 15	May 1
Skelly Oil q.	50c	June 16	May 15
Southern Pipe Line special	$5	June 2	May 15